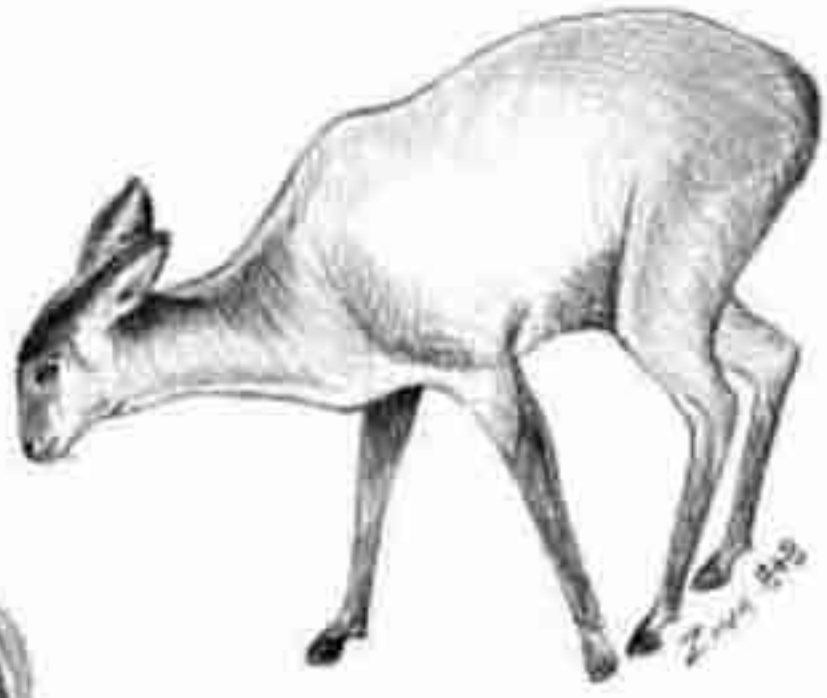
A QUESTION OF ATTITUDE:

SOUTH KOREA'S TRADITIONAL MEDICINE PRACTITIONERS AND WILDLIFE CONSERVATION

Sue Kang and Marcus Phipps

A TRAFFIC East Asia Report



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In collaboration with

Ministry of Health and Welfare, Republic of Korea
Association of Korean Oriental Medicine
Korea Oriental Drug Association

With financial support from

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EXECUTIVE SUMMARY

Traditional Korean medicine (TKM) is based on thousands of years of experience and tradition. At times, it includes the use of threatened or endangered wildlife species, such as Tiger, rhinoceros, musk deer, bear, and pangolin. Under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and under South Korea's laws, the trade in Tiger and rhinoceros is banned. Trade in musk deer, bear, and pangolin is highly restricted, although not banned.

The current survey profiles the attitudes of South Korea's traditional medicine practitioners (doctors and pharmacists) toward the use and conservation of wildlife species of medicinal value. Five species were chosen as "case studies," on the basis of their conservation status, the threat posed to wild populations by trade, and their importance as medicinal ingredients in TKM. This survey is the first to examine the attitudes of the TKM community toward wildlife conservation and to include a range of medicinal wildlife species.

With support from WWF-US, the Association of Korean Oriental Medicine (AKOM), the Ministry of Health and Welfare, and the Korea Oriental Drug Association (KODA), TRAFFIC East Asia undertook a mail survey of South Korea's traditional medicine practitioners. Two hundred and fifty-six responses were received from 3000 postal surveys. Highlights of the survey include:

- Traditional medicine practitioners report a substantial decrease between 1993 and 2001 in their use of Tiger bone, rhinoceros horn, and bear gallbladder, although a relatively high proportion of practitioners continue to use pangolin scale and musk.

- Practitioners are aware of wildlife regulations (about 90% for Tiger and rhinoceros, about 70% for musk deer, bear, and pangolin). Awareness is lowest among those with the least work experience.

- Practitioners feel that trade regulation for medicinal species has impaired their ability to treat patients. Few feel that existing regulations are too strict, however.

- Some practitioners (29%) still intend to use banned or restricted medicinal ingredients, mainly because of the perceived lack of effective substitutes.

- Practitioners use substitutes for all five species reviewed in the survey; 52% of practitioners would use more substitutes immediately if the equivalent efficacy of substitutes was proven.

- Practitioners think two measures would be most effective for survival of threatened species: (1) a total ban on the trade in endangered species (42%) and (2) development of substitutes (25%). Few think that campaigns to reduce demand (6%) or that strengthening enforcement of existing regulations (5%) would be effective.

Full details of survey findings are given in the current report. In addition, an industry profile identifies potential points for conservation interventions, as well as potential partners with whom the conservation community might take action. Recommendations in the report are based on these findings.

Highlights of recommendations include:

- *The continued use of banned and restricted species suggest*s health and conservation authorities should institute regular, ongoing monitoring of markets for medicinal species. Further, authorities should examine long-term options for more strictly supervised import and distribution of restricted medicinal ingredients within a structured and tightly controlled framework.

- *Current regulation has had significant successes and practitioners do not feel that existing regulations are too strict. Nonetheless, and particularly in light of changing trade patterns*, health and conservation authorities should discuss the current regulatory system and how to improve it with relevant stakeholders (such as practitioners, pharmaceutical manufacturers, healthcare and conservation policy makers, and enforcement agencies).

- *The willingness of practitioners to use substitutes, coupled with the perceived lack of effective substitutes, suggests* health and conservation authorities should work with the traditional medicine community to determine how best to test the efficacy of substitutes, to communicate the results of research into substitutes, and to promote the use of substitutes and alternatives to banned and restricted medicinal ingredients.

- *Licensed Western pharmacists can prescribe a limited number of traditional Korean medicines. Therefore,* the practices of these pharmacists should be reviewed to determine whether they should be included in future conservation outreach activities.

- *Knowledge of wildlife regulations is weakest among practitioners with the least work experience*. *Therefore,* health and conservation authorities should ensure that conservation issues are incorporated into the formal teaching curriculum for traditional Korean medicine and initiate the creation of appropriate teaching materials.

INTRODUCTION

Historical context – wildlife trade and traditional medicine

The World Health Organisation (WHO) estimates that as many as 80% of the world's more than six billion people rely primarily on animal and plant-based medicines (Anon., 1993). Ingredients sourced from wild plants and animals are not only widely used in traditional medicines, but are also increasingly valued as raw materials in the preparation of modern medicines and herbal preparations. Increased demand and increased human populations are leading to increased and often unsustainable rates of exploitation of wild sourced ingredients, with some wild species already threatened with extinction.

Although information on the use of wildlife for medicinal purposes is available from published pharmacopoeias and ethnobiological studies, in most cases little is known regarding harvest and trade volumes, trade controls, market dynamics and conservation impact. Nonetheless, the use of Tiger bone, rhinoceros horn, and other ingredients sourced from threatened wildlife species in traditional medicine systems such as traditional Korean medicine (TKM) has been a conservation concern since the early 1990s.

The Republic of Korea (ROK, or "South Korea") became a Party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in October 1993, almost twenty years after the Convention was first established. The decision to become a Party was largely motivated by the threat of a possible US import ban on trade in wildlife from South Korea. In 1992, US conservation groups had filed a petition calling for a trade ban with South Korea under the terms of US domestic legislation known as the *Pelly Amendment* to the *Fishermen's Protection Act of 1967*.

The principal justification for the petition was the ongoing domestic use in South Korea of rhinoceros horn and Tiger bone in traditional Korean medicine (TKM), despite a 1983 ban on the importation of rhinoceros horn by the Ministry of Health and Welfare (then called the Ministry of Social Affairs). The importation, domestic sale and storage or display for commercial purpose of rhinoceros horn and Tiger bone were banned in 1994. The US government did not proceed with a trade ban in response to the 1992 petition nor to a second petition filed in 1997 in response to South Korea's imports of bile from bear gallbladders.

TRAFFIC has undertaken a number of research projects into the use of wildlife products in TKM since the 1980s and particularly since the TRAFFIC East Asia regional office was established in 1994. These projects are reported in *Market Under Cover: the Rhinoceros Trade in South Korea* (Mills, 1993), *Killed for a Cure: A Review of the Worldwide Trade in Tiger Bone* (Mills and Jackson, 1994), and *The Bear Facts: The East Asian Market for Bear Gallbladder* (Mills *et al*, 1995). The TRAFFIC publication *Far from a Cure: The Tiger Trade Revisited* (Nowell, 2000) recommended attitudinal surveys be undertaken to identify and understand consumer demand in a number of consumer states, including South Korea. Since South Korea banned domestic trade in Tiger and rhinoceros parts and derivatives, there have been no known surveys of the attitudes of TKM doctors and pharmacists toward the use and regulation of threatened and endangered species in TKM.

The five species groups: CITES status, use in TKM, and South Korea's trade

Tiger

CITES status

CITES has recognised the endangered status of the Tiger since its inception, listing all Tiger subspecies except for the Amur (Siberian) Tiger on Appendix I of CITES on 3 July 1975. The Amur subspecies was transferred to Appendix I in 1987. CITES has undertaken a number of extraordinary measures to halt the illegal trade in Tiger parts and derivatives including requesting that Parties undertake to control domestic trade (*Resolution Conf. 9.13*; later *Resolution Conf. 11.5 Conservation of and trade in Tigers*).

Use in TKM

Tiger bone is used mainly to treat rheumatism and to strengthen bones. It is believed to have anti-inflammatory and pain-killing effects. Domestic trade, storage or display for commercial purpose has been banned in South Korea since 1994. As of 1998, however, Tiger bone still was included in the official Korean Pharmacopoeia.

Trade information

Table 1.
Conservation status of the fives species groups, as indicated by their IUCN Red List category.

Species group/ species	Common name	IUCN Red List category
Tiger		
Panthera tigris	Tiger	Endangered
Rhinoceros		
Diceros bicornis	Black Rhinoceros	Critically Endangered
Rhinoceros sondaicus	Javan Rhinoceros	Critically Endangered
Dicerorhinus sumatrensis	Sumatran Rhinoceros	Critically Endangered
Rhinoceros unicornis	Great Indian Rhinoceros	Endangered
Ceratotherium simum	White Rhinoceros	Lower Risk / Conservation Dependent
Musk Deer		
Moschus moschiferous	Siberian Musk Deer	Vulnerable
Moschus berezovskii	Forest Musk Deer	Lower Risk / Near Threatened
Moschus chrysogaster	Himalayan Musk Deer	Lower Risk / Near Threatened
Moschus fuscus	Black Musk Deer	Lower Risk / Near Threatened
Bear		
Ailuropoda melanoleuca	Giant Panda	Endangered
Melursus ursinus	Sloth Bear	Vulnerable
Tremarctos ornatus	Spectacled Bear	Vulnerable
Ursus thibetanus	Asiatic Black Bear	Vulnerable
Ursus maritimus	Polar Bear	Lower Risk / Conservation Dependent
Ursus americanus	American Black Bear	Lower Risk / Least Concern
Ursus arctos	Brown Bear	Lower Risk / Least Concern
Herarctos malayanus	Sun Bear	Data Deficient
Pangolin		
Manis crassicaudata	Indian Pangolin	Lower Risk / Near Threatened
Manis pentadactyla	Chinese Pangolin	Lower Risk / Near Threatened
Manis javanica	Malayan Pangolin	Lower Risk / Near Threatened
Manis temminckii	South African Pangolin	Lower Risk / Near Threatened

Source: Hilton-Taylor, 2000; www.redlist.org

Between 1970 and 1993, when legal international commercial trade in Tiger bone ceased, South Korea imported 8981 kg of Tiger bone from more than 12 countries (Mills and Jackson, 1994). The majority of this bone came from Indonesia (44%) and China (27%). As much as 20 per cent of this total (1883 kg) was imported in 1993 immediately prior to the implementation of the ban on Tiger trade. A voluntary registration of Tiger bone stocks was completed in February 1994, with 1061 kg of bone and 228 kg of bone powder registered by pharmaceutical manufacturers. An additional 101 kg of bone and 10 kg of bone powder was registered by other parties. Between 1985 and 1991, South Korea also exported 434 kg of Tiger products to the USA (Mills and Jackson, 1994).

In 1995, TRAFFIC conducted a telephone survey focusing on Tiger bone and Tiger bone derivatives. The survey included not only TKM doctors but also Oriental and Western pharmacists selling a patented medicine called *Kohohwan*. Of 147 pharmacies telephoned in Seoul, 25 (18%) said they had *Kohohwan*. In 47 shops visited, *Kohohwan* was seen in three (6%). Fifteen TKM clinics were visited, but none claimed to use Tiger bone. All TKM practitioners interviewed said they used very little Tiger bone before the ban, and used none after the ban. They said there were many herbal alternatives to Tiger bone and that Tiger bone was ‘too expensive’. However, one indicated that some customers still asked for Tiger bone, indicating that some demand still existed at that time (TRAFFIC East Asia unpublished survey, 1995).

A second telephone survey and direct visits investigating the possible use of Tiger bone by TKM doctors / Oriental pharmacists were made between September and November in 1998. The survey focused on major cities in South Korea including Seoul, Pusan, Incheon, Daegu, Kunsan, Ulsan, and Kwangju. Out of 211 shops and clinics, four (2%) claimed to have Tiger bone in their possession. Nineteen (9%) replied that they could obtain Tiger bone. Thirteen (6%) said they could obtain Tiger bone, but that it was likely to be a fake. The remaining 175 (83%) claimed not to possess Tiger bone, and stated that they were not willing to obtain it (TRAFFIC East Asia unpublished survey, 1998).

Rhinoceros

CITES status

All rhinoceros species were listed in CITES Appendix I by 1977. In 1994, the ninth meeting of the Conference of the Parties to CITES transferred the South African population of Southern White Rhinoceros from Appendix I to Appendix II to allow trade in hunting trophies and live animals. CoP9 also adopted *Resolution Conf. 9.14 Conservation of and trade in African and Asian rhinoceros.* This resolution, which was revised at the eleventh meeting of the Conference of Parties to CITES in 2000, suggests a range of measures including registration of rhinoceros horn stocks and the implementation of comprehensive legislation and enforcement controls over international and domestic trade in rhinoceros parts and derivatives.

Use in TKM

Rhinoceros horn is used to treat warm-febrile diseases accompanied by extreme heat or heat signs, and for very high fevers (Lee, 1995). It is believed to remove heat inside the body, relieve 'fire' toxicity, and cool the blood. Currently, rhinoceros horn is excluded from the official Korean Pharmacopoeia.

Trade information

According to official import records, South Korea imported 2857 kg of rhinoceros horn between 1970 and 1983 when a domestic ban on the import of rhinoceros horn was imposed. However, market surveys conducted in 1980 and 1982 suggested that the actual import of rhinoceros horn might have been twice the official figure (Mills, 1993). In the report *Market Under Cover*, Mills (1993) found 38 outlets (54% of the survey sample) claiming to be selling rhinoceros horn.

Musk deer

CITES status

All musk deer species are listed in the CITES appendices. Forest Musk Deer are listed in Appendix II while the Himalayan Musk Deer, the Black Musk Deer, and the Siberian Musk Deer are split-listed: some populations are in Appendix I and others in Appendix II. At the eleventh meeting of the Conference of the Parties to CITES in 2000, the Parties adopted *Resolution Conf 11.7 Conservation of and Trade in Musk Deer* which recommends that consumer states improve enforcement efforts to reduce illegal trade in musk, develop clear labelling systems for manufactured products, and seek alternatives to raw musk. The species have been included in ongoing Significant Trade reviews by the CITES Animals Committee.

Use in TKM

Musk is used to treat a wide variety of problems that impair consciousness (Lee, 1995). Because of its intensely aromatic, penetrating nature this substance is believed to open the orifices and revive the spirit.

Trade information

South Korea does not produce musk domestically. Based on information provided in South Korea's annual CITES report and by the Korea Pharmaceutical Traders Association (KPTA), from 1995 to 2001, South Korea imported 1196 kg of musk (KPTA official, pers. comm. to S. Kang, May 2002). According to a survey on possession of musk and other medicinal ingredients such as bear gallbladder conducted by MOHW in May 1997, 129 TKM clinics were in possession of 486 kg of musk (Anon., 1997).

Bear

CITES status

All species of Ursidae have been listed in the CITES appendices since 1992. Therefore, any international trade in bears or their parts is regulated by CITES in some fashion. Four species – the Sun Bear, Sloth Bear, Asiatic Black Bear and Giant Panda – are listed in CITES Appendix I. The Brown Bear populations of Bhutan, China and Mongolia, together with the Himalayan Brown Bear *Ursus arctos isabellinus*, are also listed in CITES Appendix I. The remaining populations of Brown Bear as well as the American Black Bear, and Polar Bear are listed in Appendix II. The tenth meeting of the Conference of Parties to CITES in 1997 passed *Resolution Conf. 10.8 Conservation of and trade in bears* which includes a number of recommendations addressing the issue of illegal trade including working with traditional medicine communities. When South Korea joined CITES in 1993, it maintained a reservation on Appendix II listed bear species. The reservation was withdrawn in 1996.

Use in TKM

Bear gallbladder is used to treat warm-febrile diseases with high fever and convulsions. It also is used to treat delirium associated with extensive burns. It is believed that bear gallbladder can clear heat and alleviate spasms, as well as strengthen the liver function and remove toxins from the liver (Lee, 1995). Previous research into species preferences indicated that Asiatic Black Bear is the species most favoured as a medicinal ingredient (Mills, 1995).

Trade information

From 1970 until 1993, South Korea officially imported 4135 kg of bear gallbladder (Mills *et al*, 1995). From 1993 to 1997, South Korea imported 114 kg of bear gallbladder from China, Nepal, Russia and Cambodia (Anon., 1997). According to a survey of possession conducted in 1997 by MOHW, 72 TKM clinics were in possession of 25 kg of bear gallbladder (Anon., 1997).

In 1995, TRAFFIC surveyed 43 TKM shops in the Dongdaemun district of Seoul. Of the 43 shops, 11 (26%) quoted prices for bear gallbladder, but only six (14%) had bear gallbladders in stock, and most kept their supply locked in safes. Prices had risen significantly since 1991. TRAFFIC also surveyed 42 shops in Taegu and 22 shops in Pusan. Two shops in Pusan said they sold bear gallbladder (Mills *et al*, 1995). Many of the 107 shopkeepers interviewed in 1995 said they had lost faith in the authenticity of all bear gallbladders offered for sale (Mills *et al*, 1995).

Pangolin

CITES status

All three species of Asian pangolin have been listed in CITES Appendix II since 1975. A proposal to the eleventh Conference of the Parties to CITES in 2000 to transfer the three Asian species from Appendix II to Appendix I was not carried. However, the Parties agreed to a ‘zero’ trade quota for Asian pangolin species. The species have been included in ongoing Significant Trade reviews by the CITES Animals Committee.

Use in TKM

According to the Korean Pharmacopoeia, pangolin scales are believed to help menstruation and breast milk circulation.

Trade information

In 1993 and 1994, South Korea imported a total of 29621 kg of pangolin scales valued at USD 471000 from China, Vietnam, Indonesia and Singapore. There have been no officially recorded imports of pangolin scales into South Korea since 1995 (KPTA official, pers. comm. to TRAFFIC East Asia, May, 2002). However, in 1997, the Korea Customs Service confiscated 366 kg of powdered pangolin scale smuggled from China (KCS official, pers. comm. to TRAFFIC East Asia, 28 March, 1998).

Objectives of the current survey

The current survey was conducted to profile the attitudes of TKM practitioners in South Korea toward the conservation and use of wildlife species of medicinal value. The current survey is the first to examine the attitudes of the TKM community toward wildlife conservation and to include the use of a range of medicinal wildlife species. Specifically, the survey sought information on:

- Current patterns of use by the TKM community of threatened and endangered species, namely Tiger, rhinoceros, musk deer, bear, and pangolin.

- Knowledge within the TKM community of the legal status in South Korea of threatened and endangered species.

- Knowledge within the TKM community of the availability of substitutes and alternatives to parts and derivatives of threatened and endangered species.

- Perceptions within the TKM community of the link between use of threatened and endangered species in TKM and threats to these species in the wild.

- The willingness of practitioners to adjust their use once informed of the conservation needs of threatened and endangered species.

Before detailing the survey, however, this report provides a profile of South Korea's traditional medicine community. This includes the laws and regulations governing that community. This profile gives the context in which this survey, and the resulting recommendations, occurs.

PROFILE OF KOREA'S TRADITIONAL MEDICINE COMMUNITY

Traditional Korean Medicine

The role of TKM in South Korea

The history of traditional Korean medicine reaches back more than 4000 years (Anon., 2000a). In its evolution, TKM absorbed influences from both traditional Chinese medicine (TCM) and Indian medicine systems, introduced to the Korean Peninsula during the Three Kingdom Period (4^{th}-7^{th} centuries AD) (Anon., 2001). While much of the theory underpinning TKM is linked to TCM, TKM has evolved to suit the needs and characteristics of the Korean people.

The concept of *Haneuihak*, as TKM is known today, dates to the Koryo Dynasty. In 1613, Hu Jun published the comprehensive medical text *Dong-ui-bo-gam*. This became a standard *Haneuihak* textbook for all TKM students and doctors in South Korea (Anon., 2001). *Haneuihak* remained Korea's predominant medical system until the formal introduction of Western medicine after the *Gab-O* reform in 1894.

Western medicine became Korea's dominant medical system during Japanese colonial rule, 1910-1945, on the mandate of the imperial government. The dominance of Western medicine continued beyond 1945. The shortage of Western doctors prevented TKM from being supplanted entirely, however, and there has been a resurgence of interest in TKM since the end of the Korean War. While South Korea has become highly industrialised, its people have, at the same time, re-embraced ancient traditions, such as worship of ancestors, filial obedience, and TKM (Mills, 1993).

The *Medical Service Act* was enacted in 1951. The Act recognises both Western and traditional Korean medicinal systems. Since the Act was introduced, the Ministry of Health and Social Affairs (now called the Ministry of Health and Welfare) officially recognised the Association of Korean Oriental Medicine, and AKOM has played an important role in the TKM community. In the late 1980s, resurgence in interest in TKM started on a national scale and several TKM universities were opened. Although coverage is not as complete as for Western medicine, certain components of TKM are now included in the National Medical Insurance System and coverage is gradually being increased. **Table 2** compares indicators for Western medicine and TKM in South Korea.

Table2
Indicators of resources for Western medicine and traditional Korean medicine in South Korea

Indicator	Western medicine			TKM		
	1998	1999	2000	1998	1999	2000
Number of medical schools	--	41 (1997)	--	--	11 (1998)	--
Annual entrance quota	--	3300 (1997)	--	--	760 (1998)	--
Number of licensed doctors	65 431	69 274	72 503	9914	11 345	12 108
Number of hospitals (beds)	772	790	866	100	128	136
	(173 903)	(190 103)	(210 559)	(6 177)	(7 778)	(8 424)
Number of clinics (beds)	17 041	18 507	19 472	6590	6834	7276
	(55 663)	(60 442)	(67 288)	(225)	(279)	(307)
Pharmacists	46 998	49 214	50 623		2455 (2001)	

Source: MOHW website http//:www.mohw.go.kr

Structure of the TKM community

The Ministry of Health and Welfare

The principal government agency responsible for overseeing TKM is the Ministry of Health and Welfare (MOHW). Within MOHW, the Oriental Medicine Policy Bureau was established in 1996 with a mandate to develop TKM both nationally and internationally. The Bureau consists of two divisions - the Oriental Medicine Policy Division and the Oriental Medicines Division. The Bureau also established two committees - the Korea-China Joint Committee for Oriental Medicine and the Korean Oriental Medicine Committee for the New Century.

Major foci of the Bureau include:

i. The development of TKM through grants for research within Korea and through international co-operation, particularly with China; and
ii. The improvement of quality and distribution controls for traditional *materia medica* and medicinal products.

MOHW policy statements on the latter include a specific reference to compliance with CITES (Anon., 2000a).

Other institutions and associations

The Association of the Korean Oriental Medicine

The Association of the Korean Oriental Medicine (AKOM) represents about 10000 TKM members nation-wide, about 7000 of whom are actively practising. AKOM members are allowed to diagnose, prescribe and treat patients. AKOM is structured with 16 city/provincial branches and 218 sub-branches throughout South Korea. AKOM's purpose is to contribute to public health, social welfare, and the development of TKM, as well as protect the interests of TKM doctors.

AKOM's main activities are hosting the TKM National Forum, the Korea-China Oriental Medicine Seminar, and the International Congress of Oriental Medicine. AKOM also sends a voluntary medical team, the Korean Oriental Medical Service Team Abroad (KOMSTA), overseas to assist with medical relief efforts.

The Korea Oriental Drug Association

The membership of the Korea Oriental Drug Association (KODA) is made up of over 2000 Oriental pharmacists. These pharmacists can prepare medical prescriptions listed in the TKM pharmacopoeia. Members are not necessarily graduates of TKM colleges or similar institutes. KODA members are not allowed to diagnose, prescribe or treat patients.

A total of 27060 Western pharmacists are allowed to prepare '100 TKM Prescriptions' designated by the Ministry of Health and Welfare once they pass the appropriate national exams. There are about 50000 Western pharmacists practising in South Korea.

The Korean Institute of Oriental Medicine

The Korean Institute of Oriental Medicine (KIOM), established in 1994 under the Prime Minister's office, is in charge of developing and researching TKM. In addition to policy formulation, KIOM conducts clinical trials on the efficacy, the safety, and the quality consistency of traditional medicine materials.

Other TKM-related associations include the Korean Oriental Medicine Hospital Association and the Korean Oriental Medical Society.

The TKM education system

TKM doctors

There are 11 TKM colleges in South Korea providing six-year programmes for designation as a Doctor of Oriental Medicine. The six-year programme includes two years of preparatory study and four years of regular coursework during which students study TKM theories and undertake clinical practice. The annual entrance quota is approximately 760. Each year, 700-800 students graduate from TKM universities after completing the six-year degree programme, becoming qualified as TKM doctors after passing the National License Examinations for TKM practice.

After graduation from medical college, TKM doctors are required to complete four years of practice at a TKM hospital attached to a TKM university, including a one-year internship and three years of residency. Since December 1999, the *Medical Services Act* requires TKM doctors to develop one of eight recognised areas of specialisation ranging from internal medicine to paediatrics. Specialists must pass qualifying examinations administered by AKOM.

TKM pharmacists

MOHW introduced the TKM pharmacy programme in 1996 as part of its policy to formalise TKM education and to promote parity with the Western medical system. Pharmacy departments were established at Kyunghee, Wonkwang and Wooseok Universities at that time. The departments offer four-year degree programmes for the designation Bachelor of Science in Pharmacy. Between 1997 and 2001, 395 TKM pharmacists graduated from these three universities.

The future of TKM

Meeting social needs

South Korea has a highly urbanised population. Healthcare distribution reflects this: over 90% of physicians and facilities are in urban centres. The private sector plays a large role in Korean healthcare with private clinics and hospitals making up more than 92% of available facilities and 87% of total beds (Anon., 2000a).

As expected in a relatively developed economy, the main causes of death in South Korea have shifted from acute and communicable diseases to chronic and non-communicable diseases. Also, the country's demographic profile is shifting. The number of people aged 65 or older is expected to double by 2010 and this age group is expected to comprise 13 % of the population by 2020 (Hankyore Daily, 17 March, 1997)

In response, MOHW set up 'Project 2010' in 1998 with the goals of developing TKM and herbal medicine standards of treatment in preparation for an increasingly elderly population in

the 21st century. This includes treatment of intractable diseases such as senile dementia, cerebrovascular disease, allergies, and cancer.

National medical insurance

South Korea's national medical insurance system was introduced in 1977, but did not cover TKM until 1987. Initial coverage was limited to certain areas such as diagnosis, hospitalisation, acupuncture, moxibustion (heat application) and cupping (slender jars attached to the skin to create negative pressure). Twenty-four prescriptions prepared from 68 basic extracts were covered. Now, 56 prescriptions are covered, and the government plans to extend coverage from the 68 basic extracts to more than 120 and to include mixed and complex extracts and medicines in packaged form (Anon., 2000a).

Standardisation of TKM products

In accordance with recommendations of the World Health Organization, MOHW is in the process of standardising herbal medicine ingredients and wildlife products. Initially, the 36 most frequently used raw materials were chosen from the TKM pharmacopoeia. Efforts have been made to standardise their processing, manufacturing, packing, and marking. As of May 1998, these standards were expanded to all 514 items in the pharmacopoeia. Under this system, herbal medicines/materials that meet these standards can be distributed in South Korea.

South Korea's legislation and controls

Traditional Korean medicine

TKM is subject to the *Medical Services Act* and the *Pharmaceutical Affairs Law*. TKM is under the jurisdiction of the Ministry of Health and Welfare.

The Medical Services Act

The *Medical Services Act* (MSA) was enacted in 1952 and has been amended several times. MOHW is the principal agency responsible for administering the Act. Article 1 of the MSA states its purpose: to stipulate, "matters necessary for national medical treatment, thereby to ensure the proper management of medical treatment, and to protect and improve national health" (Anon., 2002a).

Quality control of TKM is regulated through the Korean Pharmacopoeia and Medicinal Herb Standards, which stipulate production methods, properties, effects, quality and storage methods. The Pharmacopoeia lists 514 kinds of medicinal ingredients comprised of 428 flora species, 55 fauna species and 31 mineral products.

The Pharmaceutical Affairs Act

The *Pharmaceutical Affairs Law* (PAL) was enacted in 1966. The PAL stipulates matters in relation to production, dispensation, appraisal, storage, import, sale of medicinal materials or other matters relevant to pharmaceutical skills. Revisions to the *Drugs, Cosmetics, and Medical Instruments Law* in 1994 introduced a system for herbal medicine pharmacists, subject to PAL. To promote parity with the system for dispensing Western medicine, the traditional training of Oriental pharmacists through informal "apprenticeships" is being replaced with formal training in an academic setting.

Other

TKM is also subject to the Central Pharmacists Deliberations Commission as well as to regulations on testing for medicinal herbs. These include setting tolerance levels for heavy metals, tolerance levels for residual chemicals in medicinal herbs, and standard testing methods for both heavy metals and residual chemicals.

CITES implementation in South Korea

Legislation

South Korea joined CITES in 1993. It has no specific CITES-implementing legislation, but implements the Convention through various laws and regulations under different government agencies. These include the *Nature Environment Preservation Law* (NEPL) enacted in 1991 (revised in 1997 and 1999) and the *Law Concerning the Protection of Wildlife and Game* (1986, revised 1994) administered by the Ministry of Environment; the *Pharmaceutical Affairs Law* enacted in 1996 and administered by the Ministry of Health and Welfare; and the *Customs Act* (1967, amended 1995) administered by the Korea Customs Service.

The NEPL may be considered South Korea's primary legislative instrument for implementing CITES. The NEPL prohibits the export, re-export, import, and introduction from the sea of any endangered species including their parts, derivatives, or processed goods, without the approval of the MOE. It also authorises the designation of exclusive ports for trade. However, because several other laws supersede the NEPL, its coverage is limited to amphibians, reptiles, non-marine invertebrates, and terrestrial plants. In addition, it applies only to specimens for non-medical use.

The Supreme Public Prosecutors' Office (which includes the national police) and the Korea Customs Service are the principal agencies enforcing the above legislation.

Management and Scientific Authorities

South Korea has a complex system of CITES Management and Scientific Authorities, based on biological taxa and forms of utilisation. With the Global Environment Division of the Ministry of Environment as the focal point, the Ecosystem Conservation Division of MOE and the Pharmaceutical Safety Division of Korea Food and Drug Administration (KFDA) are the CITES Management Authorities. KFDA is under the Ministry of Health and Welfare and is responsible specifically for CITES species used as medicinal ingredients. For marine species, MOE issues permits on behalf of the Ministry of Maritime and Fisheries (MOMAF) as MOMAF does not have the relevant ordinances in place to issue CITES permits.

MOE's National Institute of Environmental Research and KFDA's Division of Herbal Medicine Standardisation are the CITES Scientific Authorities. Again, when CITES species are imported/exported for medicinal purposes, they fall under the jurisdiction of KFDA. MOMAF's National Fisheries Research & Development Institute functions as a Scientific Authority for marine species.

Domestic regulation in South Korea

The South Korean government designated the Tiger *Panthera tigris*, Siberian Musk Deer *Moschus moschiferous*, and Asiatic Black Bear *Ursus thibetanus*, as highly endangered species by Presidential Decree under the *Nature Environment Preservation Law* (NEPL) in 1997. Anyone who catches animals protected by the Presidential Decree is subject to imprisonment of up to five years or fines of up to KRW 30 million (USD23600 at 2001 rates). Under the terms of the NEPL, anyone who "imports/ exports/ destroys/ sets snares/ poisons/ processes/ circulates/ stores" these species is subject to imprisonment of up to three years or fines of up to KRW 25 million (USD19700 at 2001 rates).

The NEPL includes legal provisions to control trade in CITES-listed fauna and flora. With respect to non-medicinal trade, however, NEPL is superseded by the *Law Concerning the Protection of Wildlife and Game* (LCPWG). The LCPWG, administered by the Ministry of Environment, was revised in 1994 to include legal provisions to control trade in CITES-listed fauna and flora, including the five species groups in the current survey. Under the LCPWG, import or export of endangered birds and mammals requires permission from the government. Acquisition, possession, transfer, or storage of illegally obtained species is prohibited. When South Korea joined CITES in 1993, it had a reservation on bear and musk deer species listed in CITES Annex II. South Korea withdrew its reservations in 1996.

Trade in species for medicinal purposes, including the five species groups in the current survey, is regulated under the *Pharmaceutical Affairs Law* (PAL), administered by the Ministry of Health and Welfare. The PAL has prohibited import of rhinoceros horn since 1983. Further, it has prohibited the sale, storage or display for commercial purposes of medicines made from either rhinoceros horn or Tiger bone since 1994. Trade in musk deer, bear, or pangolin for medicinal purposes is regulated under the PAL, although, unlike Tiger and rhinoceros, there are no specific provisions for these species.

The import and export of wildlife, including the five species groups in the current survey, also is governed by the *Customs Act 1967* (amended 1995).

ATTITUDE SURVEY OF KOREA'S TRADITIONAL MEDICINE PRACTITIONERS

Methodology

With support from WWF-US, the Association of the Korean Oriental Medicine (AKOM), the Ministry of Health and Welfare, and the Korea Oriental Drug Association (KODA), TRAFFIC East Asia undertook a mail survey of members of AKOM and KODA. The survey was carried out with the assistance of Dongseo Research Inc., a Korean consulting company with previous experience in medicine-related surveys. The survey was conducted in Korean.

First, a questionnaire was drafted in English and circulated within TRAFFIC East Asia, TRAFFIC International, and WWF-US for review and comment. A revised English version was then translated into Korean. A Korean-language cover letter was drafted by TRAFFIC East Asia and approved by the South Korean Ministry of Health and Welfare and AKOM. Dongseo Research Inc. reviewed these documents and made technical adjustments to the questionnaire; the revised Korean version was reviewed by AKOM and TRAFFIC East Asia. An English translation of the final questionnaire is attached as **Annex 1**.

The survey period covered 15 July to 20 September 2001. The survey was national in scope with recipients randomly chosen from the membership lists of AKOM (9525 members) and KODA (2055 members). Initially, Dongseo Research Inc. sent survey letters to 1000 TKM doctors and pharmacists. Dongseo, which regularly conducts surveys on behalf of AKOM, anticipated a response rate above 20%. The response rate to the first mailing was under 10%, however, possibly due to the sensitive nature of the questionnaire. The sample size therefore was increased from 1000 to 3000. In total, 2500 were sent to AKOM members and 500 to KODA members.

The questionnaire consisted of 27 questions and had four components:

- Awareness and attitudes toward CITES
- Use of banned and regulated medicinal materials
- Use of substitutes for banned and regulated medicinal materials
- Attitudes toward the conservation of threatened species

The species groups chosen for the survey were Tiger, rhinoceros, musk deer, bear, and pangolin. These species were chosen on the basis of their conservation status, the threat posed to wild populations by trade, and their importance as medicinal ingredients in TKM.

Definitions of terms used in the report

Traditional medicine: Following the World Health Organization, traditional medicine is defined as, "the sum total of knowledge, skills and practices on holistic healthcare, which is recognised and accepted by the community for its role in the maintenance of health and treatment of diseases. Traditional medicine is based on the theory, beliefs and experience that are indigenous to the different cultures, and that is developed and handed down from generation to generation" (Anon., 2000a).

Traditional Korean Medicine (TKM): For the purposes of this report, TKM refers to traditional medicinal practices that are documented for and used on the Korean Peninsula. In South Korea,

these practices are referred to as *Haneuihak* with 'Han' meaning Korea and 'Euihak' medicine.

TKM doctor: For the purposes of this report, 'TKM doctor' refers to an AKOM member who has graduated from a six-year TKM university programme and who is licensed to diagnose illnesses, treat patients, and prescribe medication.

Oriental medicine: During the International Congress of Oriental Medicine in 1999, it was agreed that the term 'Oriental Medicine' would be used in the international context although each member country could refer to its own traditional medicine system in its own way. In the context of this report, 'Oriental' means 'Traditional Korean' or 'Herbal'. Some local associations and agencies use 'Oriental' as part of their official name.

Oriental medicine hospital: A medical institution in which Oriental medicine doctors give treatment and which is equipped with more than 30 inpatient beds.

Oriental medicine clinic: A medical institution in which an Oriental medicine doctor gives treatment and which has facilities for medical examination and treatment.

Oriental pharmacist: For the purposes of this report, 'Oriental pharmacist' refers to an herbal pharmacist licensed to prepare prescriptions based on the official pharmacopoeia, but not allowed to diagnose illness or provide medical treatment. They are also called herbal dispensers and their shops are referred to as herbal medicine shops. The majority of Oriental pharmacists have not graduated from a specific institute or college. They have been trained on the job and have many years of experience in dispensing herbal medicine.

Metropolis: An urban area with a population of over one million.

This report does not deal with Western pharmacists licensed to prepare TKM medicines or TKM pharmaceutical companies that produce over-the-counter (OTC) medicines.

Results

Characteristics of the respondents

All respondents were members of a professional organisation, either the Association of Korean Oriental Medicine (AKOM) or the Korea Oriental Drug Association (KODA). The total number of responses was 256. This response rate (8.5%) gives a statistical 'confidence level' of 6%. Of the 256 respondents, 214 were members of AKOM and 41 were members of KODA. One respondent was a member of both organizations. Demographic details of respondents are given in **Annex 2**. Given the relatively small number of responses from Oriental pharmacists, it is possible the survey results are not generally representative of this group.

Points of note include:

- Eighty-four per cent of respondents were TKM doctors and 16% were Oriental pharmacists.
- Oriental pharmacists included in the survey generally had longer work experience than TKM doctors.
- The response from TKM doctors in Seoul (26.2% of all TKM doctor responses) was higher than from Oriental pharmacists in Seoul (2.4% of all Oriental pharmacist responses).

Table 3
Responses (n=256) of traditional medicine practitioners in South Korea to questions about use of traditional wildlife medicines. (unit: percentage)

	Tiger bone	Rhino horn	Musk	Bear gall-bladder	Pangolin scale
When was your most recent use?					
Before 1994	32.4	32.0	18.8	26.6	15.6
1994-1997	3.5	12.1	14.1	10.9	20.7
1998-2001	2.0	6.6	23.8	11.7	42.2
No response	62.1	49.2	43.4	50.8	21.5
Has your use decreased since 1994?					
Decreased a lot	38.0	43.0	42.6	41.4	47.3
Decreased a little	0.8	3.5	6.3	6.6	15.6
Same as 1993	1.2	3.9	6.6	3.5	12.5
Increased a little	0	0.8	1.2	1.2	1.2
Increased a lot	0	0	0	0	0
No response	59.4	48.8	43.4	48.4	23.4
Do you currently possess this ingredient?					
Yes	2.0	7.4	13.3	8.2	45.7
No	73.4	69.5	64.8	68.0	45.3
No response	24.6	23.0	21.9	23.8	9.0
Where did supplies come from the last time you prescribed?					
Stock	19.5	28.9	20.7	21.9	45.3
New purchase	7.0	11.7	25.0	15.2	25.8
Through pharmacist	2.0	0.4	4.3	12.1	4.7
Purchase in a group	71.5	59.0	50.0	59.4	24.2
(Of those stating use after 1994, the proportion stating last purchase though a group)	0.0	0.6	1.0	3.4	0.6

Table 4
Responses (n=256) of traditional medicine practitioners in South Korea to questions about regulation and the use of substitutes. (unit: percentage)

	Tiger bone	Rhino horn	Musk	Bear gall-bladder	Pangolin scale
Have trade bans or restrictions negatively affected your ability to treat patients?					
Yes, considerably	4.3	18.8	22.7	10.5	14.8
Yes, slightly	21.3	35.9	35.2	32.0	50.0
No	60.2	33.6	32.4	46.1	29.7
No reply	14.1	11.7	9.8	11.3	5.5
Are substitutes available?					
Yes, easily	6.3	11.3	3.1	5.1	6.3
Yes, but the original is better	24.6	41.8	30.1	32.0	30.9
No, the original is indispensable	7.4	15.2	32.4	22.3	25.0
The availability of substitutes is unclear	49.2	21.9	25.4	30.1	31.3
No reply	12.5	9.8	9.0	10.5	6.6
Have you used substitutes?					
Yes	4.7	36.7	14.5	7.0	7.4
No	72.3	47.3	66.4	70.3	78.5
No reply	23.0	16.0	19.1	22.7	14.1

- Response from TKM doctors in non-metropolitan areas (44.4% of all TKM doctor responses) was lower than from Oriental pharmacists in non-metropolitan areas (70.7% of all Oriental pharmacist responses).

In numerous cases, respondents did not answer some questions – particularly controversial questions. Taking a conservative approach to analysis, percentages reported here are, unless otherwise stated, the percentages of the 256 respondents, rather than the percentage of the number of respondents answering each individual question. For example, if 100 of the 256 respondents answer "yes" to a question, 100 answer "no," and 56 do not give an answer, this is reported as 39% "yes" and 39% "no," rather than 50% "yes" and 50% "no."

Patterns of use

The use of banned materials, such as Tiger bone and rhinoceros horn, appears to have declined since 1994 (**Table 3**). Thirty-two percent of respondents state that their most recent use of Tiger bone, for example, was before 1994, while only 2% state use between 1998 and 2001. (The rate of non-response to this question is 62.1%).

The use of regulated materials continues, however, particularly of musk and pangolin scale (**Table 3**). While 15.6% of respondents last used pangolin scale before 1994, for example, 42.2% continued to use pangolin scale between 1998 and 2001.

These trends are seen more clearly when "non responses" are eliminated from the analysis (**Figure 1**). Looking only at the 97 respondents who answered positively for use of Tiger bone, 85.6% report last use before 1994, 9.3% between 1994 and 1997, and 5.2% between 1998 and 2001. Similarly, looking only at those 201 respondents who answered positively for use of pangolin scale, 19.9% report last use before 1994, 26.4% between 1994 and 1997, and 53.7% between 1998 and 2001.

Even if use continues to occur in all five species groups, the *level* of use appears to have decreased for all five groups. When asked, "Has your use decreased since 1994," most respondents answering the question state that their use has decreased substantially (**Table 4**). This suggests that, although practitioners continue to use the ingredients, they do so at a reduced level.

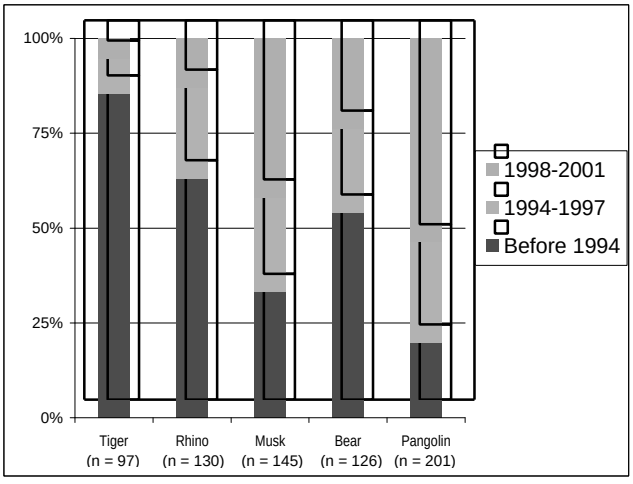

***Figure 1**. The use of Tiger bone, rhinoceros horn, and bear bile has gradually decreased, with most respondents who answered stating last use before 1994. Use of musk and pangolin scale persists, however, with a substantial number of practitioners still prescribing these ingredients between 1998 and 2001. Information derived from Table 3.*

These results – reduced use of Tiger and rhinoceros, persisting use of musk deer and pangolin – is further reflected in rates of possession (**Table 3**). Only 2% of practitioners state they currently possess Tiger bone, and less than 10% state possession for either rhinoceros horn and bear gallbladder. This rises, however, to 13% for musk, and to 45% for pangolin scale.

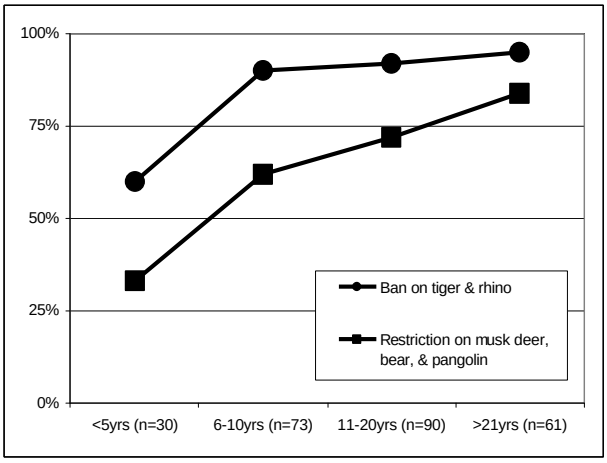

***Figure 2**. Awareness of the trade ban on Tiger and rhinoceros is greater than awareness of trade restrictions on musk deer, bear, and pangolin. Further, awareness increases with work experience.*

The information on supply chains suggests substantial change in procurement practices since South Korea's accession to CITES (**Table 3**). When purchasing high-value medicinal ingredients used in relatively small quantities, several TKM practitioners may purchase a quantity from a broker as a 'group' rather than as individuals. Prior to 1994, the medicinal ingredients of interest to the present study were commonly purchased in groups. However, there are virtually no purchases in this way after South Korea's accession to CITES. The highest is for bear gallbladder, at 3.4%.

At the subgroup level, Oriental pharmacists tend to report the use of regulated species more than TKM doctors. The rate of experience using Tiger bone is higher for Oriental pharmacists than TKM doctors, for example, and Oriental pharmacists with less than five years experience use Tiger bone more than any other subgroup. Oriental pharmacists in Seoul with more than 21 years of experience have the highest new purchase rate for both Tiger bone and rhinoceros horn. Further, Oriental pharmacists have a higher possession rate than TKM doctors for rhinoceros horn, musk, bear gallbladder, and pangolin scale. Particularly with the high rates of non-response, it is unclear if this truly reflects greater possession or simply a greater willingness of Oriental pharmacists to report more frankly.

Awareness and attitudes on regulation and on substitutes

A total of 88.7% of respondents are aware of the domestic trade ban on Tiger bone and rhinoceros horn. A total of 67.6% of respondents are aware of trade restrictions on musk, bear gallbladder, and pangolin scale. (Only 0.4% of respondents did not answer these questions.) Awareness of the ban and trade restrictions increases with greater work experience (**Figure 5**).

Respondents generally feel that the ban on Tiger has not influenced their ability to treat patients, with 60.2% saying it has "no" effect (**Table 4**). Respondents feel that the ban on rhinoceros and restrictions on musk deer and pangolin, however, have negatively affected their ability to treat patients. Over half of respondents say these regulations have either a "slight" or "considerable" negative effect.

Table 5.
Respondents' evaluation of domestic regulation of trade in medicinal wildlife such as Tiger, rhinoceros, musk, bear, and pangolin. (unit: percentage)

	Per cent
(+1) Too lax	3.9
(+2) Lax	29.7
(+3) Appropriate	29.7
(+4) Strict	28.9
(+5) Too strict	3.5
No response	4.3

Although varying numbers of respondent feel that trade restrictions on medicinal species have negatively affected their ability to treat patients, only 3.5% feel that existing regulations are too strict (**Table 5**). Only two of 256 respondents (0.8%) report experience in applying for a CITES permit, indicating a continuing dependence on wholesalers or brokers for new supplies.

In general, respondents think the use of substitutes is possible. They have limited experience with substitutes, however, and generally consider the original ingredient to be better than any substitute (**Table 4**). Principal substitutes mentioned included cat bone for Tiger bone, ox horn for rhinoceros horn, *Saussurea* root for musk, pig gallbladder for bear gallbladder, and Korean honey locust for pangolin scale. A complete list of substitutes mentioned by respondents is included in **Annex 3**. For the five species groups, a quarter to one half of practitioners is uncertain about the availability of substitutes. The highest use of substitutes is for rhinoceros horn, with 36.7% of practitioners having used substitutes. Musk is the ingredient thought to be most indispensable, with 32.4% of practitioners stating no substitute is possible. This compares with 7.4% for Tiger bone, 15.2% for rhinoceros horn, 25.0% for pangolin and 22.3% for bear gallbladder.

A majority of respondents consider research into substitutes necessary, especially for the preservation of wildlife (**Table 6**). Further, 51.6% of respondents say they would use substitutes immediately if the substitutes had similar efficacy to the original. Only 9.4% of respondents say they would still prescribe the original.

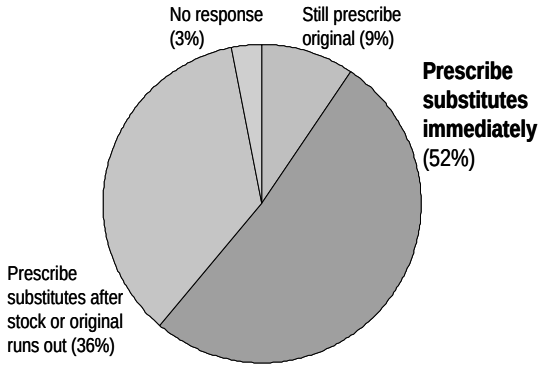

***Figure 3**. Practitioners (n=256) will prescribe substitutes for threatened species such as Tiger, rhino, musk deer, bear, and pangolin, if substitutes are shown to be of similar price and efficacy to the original.*

TKM doctors tend to use substitutes more than Oriental pharmacists. TKM doctors have substantially higher rates than Oriental pharmacists in using substitutes for rhinoceros horn, musk, and pangolin scale. A slightly lower percentage of Oriental pharmacists (as well as TKM doctors with over 21 years experience) consider research into substitutes necessary. Similarly, the willingness to use substitutes with similar efficacy to the original was lowest for Oriental pharmacists in Seoul with 11-20 year work experience, in comparison to other subgroups.

Attitudes toward the conservation of threatened species

South Korea's traditional medicine practitioners believe that habitat destruction, not trade, is the greatest threat to endangered species (**Table 6**). Still, they acknowledge that trade for medicines has a negative impact on species in the wild. Fifty-eight per cent of respondents give habitat destruction as the major cause in the endangerment of species, followed by trade for medicinal purposes, hunting, and pollution (12.1% for each category). Over two-thirds (72.3%) think that the use of banned medicinal materials has a negative impact on wildlife conservation. There are no major differences among the sub-groups and over 65% of the respondents in all sub-groups agree on the negative impact of medicinal use of animal ingredients on wildlife conservation.

Notwithstanding the conservation concerns raised by trade in medicinal species, 28.9% of the respondents state they will continue to use regulated medicinal ingredients (**Table 6**). These respondents believe that no substitutes are available (58.1%) and the original medicinal ingredients have excellent efficacy (52.7%). This intention to continue use is highest in Oriental pharmacists in Seoul with over 21 years work experience.

The two measures thought to best ensure the survival of threatened species in the wild are (1) a total ban on trade in endangered species (42.2% of respondents) and (2) the development of substitutes (25.0%). Only 5.9% of respondents think that campaigning to reduce the demand will be effective; only 5.1% think strengthening the enforcement of existing regulation will be effective.

Table 6
Responses (n-256) of traditional medicine practitioners in South Korea to questions about conservation. (unit: percentage)

	Per cent
Why are species endangered?	
Habitat destruction	58.2
Traded for medicine	12.1
Hunted for food	12.1
Pollution	12.1
Other	
No reply	
Does TKM have a negative impact on species in the wild?	
Yes	72.3
No, not if properly regulated	27.3
No, there are many animals in the wild	0.4
No reply	0.0
How best to conserve these species?	
Total ban on trade	42.2
Develop substitutes	25.0
Increase wild populations	12.1
Captive breeding	6.3
Improve enforcement of existing regulations	5.9
Campaign to reduce demand	5.1
Other	3.4
Will you continue to use these species?	
Yes	28.9
No	69.1
No reply	2.0
If you intend to continue to use these species, why? (n=74)[1]	
There are no substitutes	58.1
The original is truly effective	52.7
To use up stock	10.8
Tradition/customer preference	4.1
Is research into substitutes necessary?	
Yes	86.7
No	10.9
No response	2.3
If research is necessary, why? (n=222) [1]	
To preserve wildlife (plants & animals)	30.2
To find medically effective products	9.5
To better treat patients	8.6
Originals are hard to obtain	5.9

1. Top four responses. Numbers can sum to more than 100% because respondents could give more than one reason.

DISCUSSION AND RECOMMENDATIONS

Discussion

South Korea's TKM practitioners have high awareness of the ban on Tiger and rhinoceros parts and derivatives. They also are aware of restrictions on musk deer, bear, and pangolin. There has been a clear decrease in the use of the two banned species groups (Tiger and rhinoceros) since 1994, as well as a decrease in the use of one of the restricted species groups (bear). TKM practitioners acknowledge the negative impact of ongoing trade in threatened species, and the need to regulate this trade. TKM practitioners believe that research into substitutes for medicinal ingredients sourced from threatened wildlife is necessary and appropriate. Further, a majority of practitioners would willingly use substitutes provided a similar level of efficacy.

Still, use and trade of restricted species persists and will continue to persist for the foreseeable future. Twenty-nine per cent of respondents in the current survey state their intent to continue use of the five medicinal ingredients either because of a lack of acceptable substitutes or their conviction about the medical efficacy of the original ingredient.

The high percentage of non-responses to questions regarding use and possession of regulated ingredients increases the uncertainty of results. It is possible that actual user and possession rates are higher than reported, but this cannot be stated with certainty. Given the recent history of international and domestic pressure placed on South Korea's TKM community, the responses were strikingly candid.

Each species group presents its own challenges. Rhinoceros horn appears to require more attention than Tiger bone, for example, as a higher number of respondents state that their ability to treat patients has been negatively affected by the ban on trade in rhinoceros. Further, double the respondents (15.2%) consider rhinoceros horn to be indispensable compared to Tiger bone (7.4%) and three times the respondents report use of rhinoceros horn after the 1994 compared to Tiger bone (18.7% compared to 5.5%).

With regard to the three restricted species groups, pangolin appears to have the greatest needs in terms of increased awareness of conservation threats and of conservation measures already in place. This is indicated by the high possession rate, the high proportion of practitioners continuing to use pangolin scale, and the high perception of a negative impact of trade restrictions on the ability to treat patients. Musk deer is also of concern. While 18.8% last used musk before 1994, 23.8% continued to use musk as recently as 1998-2001. Further, 57.9% of respondents report that trade restrictions on musk had affected their ability to treat patients; 32.4% of respondents consider musk indispensable. The impact of trade restrictions on bear gallbladder was less clear-cut, although there appears to be a decline in use: 26.6% of respondents last used bear gallbladder before 1994, while 11.7% continued to use bear gallbladder as recently as 1998-2001, long after South Korea withdrew its CITES reservation on bears in 1996.

A reduction in use of regulated ingredients, suggested by the current survey, is generally in keeping with previous surveys. Only 7.4% of respondents in the current survey report having rhinoceros horn in their possession, for example, as compared to 54% in the survey from 1993 (Mills, 1993). Further, only 8.2% of respondents report having bear gallbladder in their

possession, as compared with 21.5% in the survey from 1995.

The results of the current survey suggest that there is still considerable opportunity to promote the use of substitutes within the TKM community. Dissemination of information on substitutes should be particularly effective for Tiger bone and rhinoceros horn, in that these ingredients are not thought of as indispensable.

Oriental pharmacists and TKM doctors with over ten years of work experience seem to be the most conservative in their views. These two groups may be the most resistive to changes in practice. This is indicated by subgroup comparisons on questions about CITES restrictions and their treatment of patients, about current possession, their intent to use banned materials, and their willingness to use substitutes with similar efficacy to the originals. Although the number of Oriental pharmacists is one-fifth than of TKM doctors, awareness efforts might usefully target Oriental pharmacists.

The industry profile in this report shows clearly that there are several key points for intervention. South Korea has laws in place for the protection of endangered species and an extensive system to regulate traditional Korean medicine. Further, South Korea's educational system for traditional medicine practitioners provides an excellent forum for distributing information about traditional medicines' impact on species in the wild, and national and international regulations of trade in traditional medicine ingredients. The memberships of AKOM and KODA cover almost all of South Korea's TKM doctors and pharmacists. Conservation organizations will have their greatest impact by working within South Korea's existing system of regulation – on the training of practitioners, and standards for quality of medicinal ingredients, for example – along with South Korea's professional associations for traditional medicine.

Recommendations

The demographics of South Korea's population are shifting toward an increasingly elderly population. Healthcare needs are shifting from acute to chronic conditions. These are the conditions that TKM is well suited to treat. The demand for TKM services and products is likely to increase in future. TRAFFIC East Asia therefore recommends that,

- Health and conservation authorities institute regular, ongoing monitoring of the market for medicinal species not only for species like musk deer and pangolin where demand may be increasing, but also for species like Tiger and rhinoceros where levels of demand appear to have stabilised.

Responses show a shift in methods of purchase for banned/restricted medicinal ingredients away from group to individual purchase. At the same time, responses show little experience in applying for CITES permits. This may indicate that practitioners are acquiring stock directly, possibly through informal and illegal channels and that trade patterns have shifted since the introduction of regulations in 1994. TRAFFIC East Asia therefore recommends that,

- Relevant authorities review the existing system for implementation of CITES and domestic controls on trade in medicinal wildlife species in light of developments since trade restrictions were put in place in 1994. This review should examine existing regulations as well as the current management structure for implementing these regulations.

- Relevant authorities examine long-term options for more strictly supervised import and distribution of restricted medicinal ingredients within a structured and tightly controlled framework.

- Health and conservation authorities organise a workshop for TKM practitioners, pharmaceutical manufacturers, healthcare and conservation policy makers, and enforcement agencies to discuss the current regulatory system and how to improve it.

Despite their relatively small number in comparison to TKM doctors, results show the importance of Oriental pharmacists as consumers of medicinal wildlife. However, Western pharmacists licensed to prepare the '100 TKM prescriptions' were not included in the survey nor have the contents of the '100 TKM prescriptions' been analysed from a conservation point of view. A large number of Western pharmacists (over 26000) are licensed to prepare the '100 TKM prescriptions'. TRAFFIC East Asia therefore recommends that,

- Ingredients in the '100 TKM prescriptions' be identified and potential conservation impacts evaluated. Results of this analysis will show whether it is necessary to survey licensed Western pharmacists and to include them in future conservation outreach activities.

Survey results show a contradiction between respondents' recognition of the negative impact of medicinal trade and stated intent to continue using banned/restricted ingredients. The reasons for this intent to continue use are the lack of substitutes and conviction about the efficacy of original ingredients. As the TKM community determines which substitutes are acceptable, it is important to learn what TKM practitioners think are the feasible solutions to ensure both the future development of TKM and the conservation of medicinal species. TRAFFIC East Asia therefore recommends that,

- The health authorities support research into substitutes for ingredients sourced from threatened or endangered wildlife species including, where appropriate, clinical trials.

- The health and conservation authorities work with the TKM community to determine how best to test the efficacy of substitutes, to communicate the results of research into substitutes, and to promote the use of substitutes and alternatives to banned and restricted medicinal ingredients. The *First International Symposium on Endangered Species Used in Traditional East Asian Medicine: Substitutes for Tiger Bone and Musk* organised by the Chinese Medicinal Material Research Centre of the Chinese University of Hong Kong and TRAFFIC East Asia in December 1997 may provide a useful model.

The five species groups included in the current survey are important medicinal ingredients and are all of conservation concern. However, they are not the only wildlife species of conservation concern used in TKM. TRAFFIC East Asia therefore recommends that,

- While the ingredients sourced from species included in the current survey should be considered priorities for substitute research, particularly rhinoceros horn, musk, and pangolin scale, the use of other medicinal wildlife also needs to be reviewed. The widely used '100 TKM Prescriptions', which can also be prepared by Western pharmacists, provides a useful starting point for this review.

Perhaps one of the most surprising results of the survey was the marked gap in awareness of existing trade restrictions and bans between practitioners with less than five years experience and other subgroups. TRAFFIC East Asia therefore recommends that,

- The health and conservation authorities ensure that conservation issues are incorporated into the formal TKM teaching curriculum and initiate the creation of appropriate teaching materials to support this.

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ANNEX 1.

English translation of questionnaire given to traditional Korean medicine practitioners in South Korea

1. When was the last time you used the following medicinal ingredients? Please select the latest year for each ingredient respectively.

Medicinal ingredient	Latest year
(1) Tiger bone	(1) 1998-2001 (2) 1994-1997 (3) before 1993
(2) Rhinoceros horn	(1) 1998-2001 (2) 1994-1997 (3) before 1993
(3) Pangolin scales	(1) 1998-2001 (2) 1994-1997 (3) before 1993
(4) Musk	(1) 1998-2001 (2) 1994-1997 (3) before 1993
(5) Bear gallbladder	(1) 1998-2001 (2) 1994-1997 (3) before 1993

2. When you last used these ingredients, was it stock on hand or newly purchased materials? Please answer for each medicinal ingredient respectively.

Medicinal ingredient	Stock on hand or newly purchased?
(1) Tiger bone	(1) stock on hand (2) newly purchased (3) other (how_____?)
(2) Rhinoceros horn	(1) stock on hand (2) newly purchased (3) other (how_____?)
(3) Pangolin scales	(1) stock on hand (2) newly purchased (3) other (how_____?)
(4) Musk	(1) stock on hand (2) newly purchased (3) other (how_____?)
(5) Bear gallbladder	(1) stock on hand (2) newly purchased (3) other (how_____?)

=>Where the answer is “other”, please specify how you obtained the materials.

3. Comparing the years before and after 1993, how has your usage of the following medicinal ingredients changed in terms of prescribing? Decreased or increased? Please answer for each ingredient respectively.

Medicinal ingredient	Increased or decreased after 1993?
(1) Tiger bone	(1) decreased a lot (2) decreased a little (3) same level as 1993 (4) increased a little (5) increased a lot
(2) Rhinoceros horn	(1) decreased a lot (2) decreased a little (3) same level as 1993 (4) increased a little (5) increased a lot
(3) Pangolin scales	(1) decreased a lot (2) decreased a little (3) same level as 1993 (4) increased a little (5) increased a lot
(4) Musk	(1) decreased a lot (2) decreased a little (3) same level as 1993 (4) increased a little (5) increased a lot
(5) Bear gallbladder	(1) decreased a lot (2) decreased a little (3) same level as 1993 (4) increased a little (5) increased a lot

4. Do you have following medicinal ingredients in your possession? If so, please describe the quantity in grams for each ingredient respectively.

Medicinal ingredient	Currently in possession of (2001)?
(1) Tiger bone	(1) Yes (____g) (2) Not in possession of
(2) Rhinoceros horn	(1) Yes (____g) (2) Not in possession of
(3) Pangolin scale	(1) Yes (____g) (2) Not in possession of
(4) Musk	(1) Yes (____g) (2) Not in possession of
(5) Bear gallbladder	(1) Yes (____g) (2) Not in possession of

5. Have you used substitutes with similar efficacy for the following medicinal materials? If so, what were those substitute materials? Please answer for each medicinal material respectively.

Medicinal ingredient	Experience in using substitutes
(1) Tiger bone	(1) Yes (Substitute: _____) (2) No
(2) Rhinoceros horn	(1) Yes (Substitute: _____) (2) No
(3) Pangolin	(1) Yes (Substitute: _____) (2) No
(4) Musk	(1) Yes (Substitute: _____) (2) No
(5) Bear gallbladder	(1) Yes (Substitute: _____) (2) No

6. Please select the response which best describes the availability of substitutes for the following medicinal ingredients.

Medicinal ingredient	Response
(1) Tiger bone	(1) No substitute available, it is an indispensable material. (2) Possible to substitute for, but better to use original material. (3) Easy to substitute for. (4) I do not know (Not sure).
(2) Rhinoceros horn	(1) No substitute available, it is an indispensable material. (2) Possible to substitute for, but better to use original material. (3) Easy to substitute for. (4) I do not know (Not sure).
(3) Pangolin scale	(1) No substitute available, it is an indispensable material. (2) Possible to substitute for, but better to use original material. (3) Easy to substitute for. (4) I do not know (Not sure).
(4) Musk	(1) No substitute available, it is an indispensable material. (2) Possible to substitute for, but better to use original material. (3) Easy to substitute for. (4) I do not know (Not sure).
(5) Bear gallbladder	(1) No substitute available, it is an indispensable material. (2) Possible to substitute for, but better to use original material. (3) Easy to substitute for. (4) I do not know (Not sure).

7. Do you think research in substitutes for medicinal ingredients such as Tiger bone, rhinoceros horn, pangolin scale, musk, and bear gallbladder is necessary?

Need for substitute research?	Why?
(1) Necessary	
(2) Not necessary	

8. Which form of substitute do you prefer as substitutes for Tiger bone, rhinoceros horn, pangolin scale, musk, and bear gallbladder?

   (1) Prefer plant substitutes;
   (2) Prefer animal substitutes;
   (3) Do not care if animal or plant.

9. If the price and efficacy of available substitutes were shown to be similar to medicinal ingredients such as Tiger bone, rhinoceros horn, pangolin scale, musk, and bear gallbladder, what would you prescribe? Please select one of the following.

   (1) I still would prescribe original medicinal ingredients (Tiger bone, rhinoceros horn, pangolin scale, musk, bear gallbladder).

(2) I would prescribe substitutes only after all stocks on hand (of Tiger bone, rhinoceros horn, pangolin scale, musk, bear gallbladder) run out.
(3) I would use substitutes immediately.

10. What do you think the impact of continued use of these materials (Tiger bone, rhinoceros horn, pangolin scale, musk, bear gallbladder) by the TEAM industry would be on the wild populations of these species?

(1) No big impact as there are plenty left in the wild.
(2) No big impact if the trade is regulated to an appropriate degree.
(3) It will not have a positive impact on species in the wild.

11. How important do you think it is to protect wild species (Tiger, rhino, pangolin, musk deer, and bear) that are used for medicinal purposes?

(1) Not at all important
(2) Not very important
(3) Not sure
(4) Important
(5) Very important

11-1. For those who chose (4) & (5) above indicating that it is important to protect these species, please choose one or more of the following responses which best indicates the reasons for your choice (You may choose more than one response).

(6) Because all the living things on the planet, including human beings, should live in harmony.
(7) Because these medicinal species are endangered in the wild.
(8) Due to political pressure from USA.
(9) Due to pressure from western environmental NGOs.
(10) Other (please specify_____).

12. In your opinion, what are the major factors causing these wild species to be endangered? Please number the factors in order of importance with "1" being the most important.

Factor	Importance
(a) habitat destruction	
(b) pollution	
(c) harvest for food	
(d) trade for medicinal purposes	
(e) hunting	
(f) other (please specify_____)	

13. In your opinion, what measures are necessary to ensure the survival of these endangered species? Please number the following measures in terms of priority with "1" being the highest priority.

Measure	Priority
(a) Totally ban the trade in endangered species	
(b) Encourage the development of substitutes	
(c) Promote captive breeding of endangered species	
(d) Strengthen current enforcement ordinances/laws	
(e) Increase the number of species in the wild	
(f) Campaign to reduce the demand for endangered species	

14. Are you aware that domestic trade in Tiger bone and rhinoceros horn has been banned as of 1994 under CITES-related laws?

(1) Yes
(2) No

15. Are you aware that the trade in musk, pangolin scale, and bear gallbladder is regulated through permits under CITES-related laws?
    (1) Yes
    (2) No

16. What do you think of the current level of regulation of the domestic trade in medicinal ingredients such as Tiger bone, rhinoceros horn, musk, pangolin scale, and bear gallbladder?

    (1) Too lax
    (2) Lax
    (3) Appropriate
    (4) Strict
    (5) Too strict

17. Have you applied for CITES permits to import any of these medicinal materials?

    (1) Yes (Please proceed to Question #17-1)
    (2) No (Please proceed to Question #18)

17-1. Based on your experience in applying for CITES permits, what do you think of the procedures?
    (1) Difficult
    (2) Average
    (3) Easy

18. How did the domestic trade ban/restrictions on the following medicinal ingredients affect your ability to treat patients?

Medicinal ingredient	Affected or not affected after 1993?
(1) Tiger bone	(1) not at all (2) a little bit (3) significantly affected
(2) Rhinoceros horn	(1) not at all (2) a little bit (3) significantly affected
(3) Pangolin scale	(1) not at all (2) a little bit (3) significantly affected
(4) Musk	(1) not at all (2) a little bit (3) significantly affected
(5) Bear gallbladder	(1) not at all (2) a little bit (3) significantly affected

19. Medicinal ingredients such as Tiger bone, rhinoceros horn, musk, pangolin scale, and bear gallbladder are harvested from endangered species in the wild. Do you intend to continue using these materials?

    (1) Yes (Please proceed to Question #19-1)
    (2) No (Please proceed to the annexed Question #1)

    19-1. What are the reasons for your intention to continue to use medicinal ingredients such as Tiger bone, rhinoceros horn, musk, pangolin, and bear gallbladder? (* You may choose more than one response)

    (1) The efficacy of Tiger bone, rhinoceros horn, musk, pangolin scale, bear gallbladder is excellent.
    (2) There are no substitutes available.
    (3) Because the patients want it.
    (4) In order to get rid of the stocks on hand.
    (5) Due to old customs which have existed for generations.
    (6) Other (Please specify _____)

Annexed questions for statistical classification

1.Which association do you belong to?
(1) Association of Korean Oriental Medicine
(2) Korea Oriental Drug Association

2. What is your age group? _____ years old
(1) 20-29
(2) 30-39
(3) 40-49
(4) 50-59
(4) 60 years and above

3. What is your sex?
(1) male
(2) female

4. Where is your workplace?
(1) Seoul
(2) Pusan
(3) Daegu/Incheon/Kwangju/Daejeon/Ulsan
(4) Other cities / counties

5. How long is your work experience?
(1) below 5 yrs
(2) 5-10 yrs
(3) 11-15 yrs
(4) 16-20 yrs
(5) 21-30 yrs
(6) above 30 years

ANNEX 2.

Demographic characteristics of respondents

		Total	Occupation		Age			Gender		Place of Work			Work experience			
			TKM doctor	Oriental pharmacist	30s	40s	Over 50	Male	Female	Seoul	Other Major Cites	Other counties & cities	< 5 yrs	6-10 yrs	11-20 yrs	> 20 yrs
Base for %		(256) 100.0	(214) 100.0	(41) 100.0	(117) 100.0	(75) 100.0	(64) 100.0	(236) 100.0	(20) 100.0	(58) 100.0	(74) 100.0	(124) 100.0	(30) 100.0	(73) 100.0	(90) 100.0	(61) 100.0
Occupation	TKM doctor	83.6	100.0		100.0	96.0	39.1	82.2	100.0	96.6	85.1	76.6	100.0	100.0	87.8	49.2
	Oriental pharmacist	16.0		100.0		4.0	59.4	17.4		1.7	14.9	23.4			12.2	49.2
	Both	0.4					1.6	0.4		1.7						1.6
Age	30s	45.7	54.7		100.0			42.8	80.0	43.1	54.1	41.9	93.3	87.7	27.8	
	40s	29.3	33.6	7.3		100.0		30.1	20.0	37.9	24.3	28.2	6.7	11.0	60.0	14.8
	50s	11.3	5.6	41.5			45.3	12.3		6.9	8.1	15.3		1.4	8.9	32.8
	>60	13.7	6.1	51.2			54.7	14.8		12.1	13.5	14.5			3.3	52.5
Gender	Male	92.2	90.7	100.0	86.3	94.7	100.0	100.0		86.2	87.8	97.6	80.0	93.2	90.0	100.0
	Female	7.8	9.3		13.7	5.3			100.0	13.8	12.2	2.4	20.0	6.8	10.0	
Place of work	Seoul	22.7	26.2	2.4	21.4	29.2	17.2	21.2	40.0	100.0			23.3	23.3	20.0	24.6
	Pusan	5.5	6.1	2.4	4.3	6.7	6.3	4.7	15.0		18.9		6.7	1.4	6.7	8.2
	Other major cities	23.4	23.4	24.4	29.9	17.3	18.8	22.9	30.0		81.1		16.7	28.8	24.4	19.7
	Others	48.4	44.4	70.7	44.4	46.7	57.8	51.3	15.0			100.0	53.3	46.6	48.9	47.5
Work Experience	<5 yrs	11.7	14.0		23.9	2.7		10.2	30.2	12.1	9.5	12.9	100.0			
	6-10 yrs	28.5	34.1		54.7	10.7	1.6	28.8	25.0	29.3	29.7	27.4		100.0		
	11-15 yrs	19.9	23.8		21.4	34.7		19.1	30.0	15.5	28.4	16.9			56.7	
	16-20 yrs	15.2	13.1	26.8		37.3	17.2	15.3	15.0	15.5	9.5	18.5			43.3	
	21-30 yrs	8.6	7.9	12.2		12.0	20.3	9.3		15.5	5.4	7.3				36.1
	>30 yrs	15.2	6.1	61.0			60.9	16.5		10.3	17.6	16.1				63.9
	No response	0.8	0.9			2.7		0.8		1.7		0.8				

Base: Total respondents

ANNEX 3.

Substitutes used by practitioners and found to be of similar efficacy. Number in parentheses is the number of traditional medicine practitioners mentioning this substitute.

Tiger bone	Rhinoceros horn	Musk	Bear gallbladder	Pangolin scale
(n=12)	(n=94)	(n=31)	(n=18)	(n=19)
Cat bone (3)	Ox horn (51)	*Saussurea* root (24)	Pig gallbladder (8)	*Glesdistsae spina* (Korean honey locust) (12)
Acanthopanax bark (2)	*Suh-gak-bang* ("Rhino horn powder") (16)	*Aquilaria agallocha* (14)	Ox gallbladder (3)	*Lonicerae flos* (Japanese honeysuckle) (3)
Ox horn / deer horn (2)	*Cimicifuga heracleifolia* (Black cohosh) (10)	*Borneolum* (Camphor tree) (4)	Dog gallbladder (1)	*Acanthopanax* root/bark (2)
Ox tendon (1)	Water buffalo horn (7)	"Artificial" musk (2)	*Artemisia capillaris herba* (mugwort) (1)	*Testudinis plastrum* (turtle shell) (1)
Ox bezoar (1)	*Rehmania glutinosa* (5)	*Agastachis herba* (anise hyssop) (1)	*Scirpi rhizomi* (papyrus) (1)	*Tetrapanacis medula* (1)
Horse bone (1)	Antelope horn (5)	Synthetic musk (1)	*Cheong-woo* (English elm) (1)	Devil's Claw (1)
Angelicae pubescentis radix (wolfberry) (1)	Black ox horn (3)		*Boo-gak* (kelp) (1)	*Hoveniae semen cum fructus* (*Akebia*) (1)
Erythrinae bark with *Linderae radix* (corn) (1)	*Scutellariae radix* (Virginia skullcap) (2)		*Jaedam* (translation not confirmed) (2)	
Eucommia cortex (Gutta-percha tree) with *Ostreae concha* (oyster shell) (1)	Other (12)		*Dap-dam* (translation not confirmed) (1)	

ANNEX 4 – SURVEY DATA COMPILED BY DONGSEO RESEARCH INC.

Q. 1 When was the last time you used the following medicinal ingredients? (Please select the latest year for each ingredient respectively)

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Tiger bone	98-01	2.0	1.9	2.4	1.7	1.3	3.1	1.7	5.0	5.2	1.4	0.8	3.3	4.1	1.1	0
	94-97	3.5	3.3	4.9	3.4	1.3	6.3	3.8	0	5.2	2.7	3.2	6.7	1.4	3.3	4.9
	Before 94	32.4	26.6	63.4	16.2	42.7	50.0	34.3	10.0	29.3	28.4	36.3	6.7	21.9	33.3	55.7
	No response	62.1	68.2	29.3	78.6	54.7	40.6	60.2	85.0	60.3	67.6	59.7	83.3	72.6	62.2	39.3
Rhino horn	98-01	6.6	5.1	14.6	6.8	4.0	9.4	7.2	0	6.9	4.1	8.1	6.7	8.2	4.4	8.2
	94-97	12.1	12.1	12.2	8.5	20.0	9.4	11.4	20.0	15.5	13.5	9.7	6.7	8.2	16.7	13.1
	Before 94	32.0	28.5	51.2	18.8	37.3	50.0	32.6	25.0	36.2	25.7	33.9	6.7	27.4	32.2	49.2
	No response	49.2	54.2	22.0	65.8	38.7	31.3	48.7	55.0	41.4	56.8	48.4	80.0	56.2	46.7	29.5
Pangolin	98-01	42.2	40.2	53.7	39.3	44.0	45.3	42.8	35.0	32.8	40.5	47.6	50.0	37.0	44.4	41.0
	94-97	20.7	20.1	24.4	17.9	21.3	25.0	21.2	15.0	25.9	20.3	18.5	0	21.9	23.3	26.2
	Before 94	15.6	15.4	17.1	10.3	21.3	18.8	16.5	5.0	13.8	18.9	14.5	0	16.4	14.4	23.0
	No response	21.5	24.3	4.9	32.5	13.3	10.9	19.5	45.0	27.6	20.3	19.4	50.0	24.7	17.8	9.8
Musk	98-01	23.8	25.2	17.1	20.5	29.3	23.4	23.3	30.0	37.9	18.9	20.2	36.7	21.9	21.1	24.6
	94-97	14.1	13.6	17.1	10.3	17.3	17.2	14.4	10.0	22.4	6.8	14.5	6.7	6.8	16.7	23.0
	Before 94	18.8	15.4	36.6	10.3	22.7	29.7	19.9	5.0	12.1	18.9	21.8	0	15.1	21.1	27.9
	No response	43.4	45.8	29.3	59.0	30.7	29.7	42.4	55.0	27.6	55.4	43.5	56.7	56.2	41.1	24.6
Bear gall bladder	98-01	11.7	12.6	7.3	10.3	16.0	9.4	11.9	10.0	22.4	5.4	10.5	6.7	16.4	10.0	11.5
	94-97	10.9	10.7	12.2	10.3	8.0	15.6	11.0	10.0	15.5	10.8	8.9	3.3	11.0	11.1	14.8
	Before 94	26.6	22.4	48.8	12.0	36.0	42.2	28.0	10.0	22.4	23.0	30.6	6.7	15.1	30.0	44.3
	No response	50.8	54.2	31.7	67.5	40.0	32.8	49.2	70.0	39.7	60.8	50.0	83.3	57.5	48.9	29.5

Base: Total Respondents

Q. 2 When you last used these ingredients, was it stock on hand or newly purchased materials?(Please answer for each medicinal ingredient respectively)

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Tiger bone	Stock	19.5	16.4	36.6	6.8	29.3	31.3	20.8	5.0	22.4	13.5	21.8	3.3	12.3	22.2	32.8
	New purchase	7.0	6.5	9.8	4.3	8.0	10.9	7.6	0	12.1	4.1	6.5	10.0	0	5.6	14.8
	Pharmacist	2.0	2.3	0	1.7	2.7	1.6	2.1	0	3.4	0	2.4	0	2.7	3.3	0
	Buy in group	71.5	74.8	53.7	87.2	60.0	56.3	69.5	95.0	62.1	82.4	69.4	86.7	84.9	68.9	52.5
Rhino horn	Stock	28.9	25.7	46.3	17.1	41.3	35.9	29.2	25.0	32.8	21.6	31.5	10.0	26.0	34.4	34.4
	New purchase	11.7	11.7	12.2	8.5	16.0	12.5	11.9	10.0	17.2	9.5	10.5	6.7	6.8	12.2	18.0
	Pharmacist	0.4	0.5	0	0	1.3	0	0.4	0	0	0	0.8	0	0	1.1	0
	Buy in group	59.0	62.1	41.5	74.4	41.3	51.6	58.5	65.0	50.0	68.9	57.3	83.3	67.1	52.2	47.5
Pangolin	Stock	45.3	42.5	61.0	35.9	48.0	59.4	47.0	25.0	32.8	44.6	51.6	26.7	37.0	51.1	55.7
	New purchase	25.8	26.2	24.4	22.2	34.7	21.9	25.8	25.0	32.8	23.0	24.2	20.0	24.7	26.7	27.9
	Pharmacist	4.7	4.2	7.3	4.3	4.0	6.3	4.7	5.0	3.4	5.4	4.8	3.3	4.1	5.6	4.9
	Buy in group	24.2	27.1	7.3	37.6	13.3	12.5	22.5	45.0	31.0	27.0	19.4	50.0	34.2	16.7	11.5
Musk	Stock	20.7	19.2	29.3	11.1	22.7	35.9	21.2	15.0	24.1	13.5	23.4	10.0	11.0	22.2	36.1
	New purchase	25.0	26.2	19.5	18.8	37.3	21.9	25.4	20.0	43.1	18.9	20.2	30.0	16.4	28.9	26.2
	Pharmacist	4.3	4.7	2.4	3.4	8.0	1.6	4.2	5.0	3.4	2.7	5.6	3.3	4.1	5.6	3.3
	Buy in group	50.0	50.0	48.8	66.7	32.0	40.6	49.2	60.0	29.3	64.9	50.8	56.7	68.5	43.3	34.4
Bear gall bladder	Stock	21.9	19.6	34.1	12.0	28.0	32.8	23.3	5.0	29.3	13.5	23.4	6.7	13.7	26.7	32.8
	New purchase	15.2	16.4	9.8	13.7	21.3	10.9	15.3	15.0	22.4	10.8	14.5	6.7	15.1	17.8	14.8
	Pharmacist	3.5	3.7	2.4	1.7	5.3	4.7	3.8	0	3.4	2.7	4.0	0	5.5	2.2	4.9
	Buy in group	59.4	60.3	53.7	72.6	45.3	51.6	57.6	80.0	44.8	73.0	58.1	86.7	65.8	53.3	47.5

Base: Total respondents

Q. 3 Comparing the years before and after 1993, how has your usage of the following medicinal ingredients changed in terms of prescribing? Decreased or increased? Please answer for each ingredient respectively.

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Tiger bone	Decreased	38.7	35.5	58.5	23.9	45.3	57.8	41.1	10.0	46.6	32.4	38.7	16.7	28.8	38.9	60.7
	Decreased somewhat	0.8	0.5	2.4	0.9	0	1.6	0.8	0	1.7	0	0.8	3.3	0	0	1.6
	Same as before 93	1.2	0.9	2.4	0.9	1.3	1.6	0.8	5.0	1.7	1.4	0.8	3.3	1.4	0	1.6
	No response	59.4	63.6	36.6	74.4	53.3	39.1	57.2	85.0	50.0	66.2	59.7	76.7	69.9	61.1	36.1
Neutral (+3)		2.9	2.6	3.8	3.3	2.9	2.6	2.0	33.3	3.4	4.0	2.0	14.3	4.5	0	2.6
Negative (+1/+2)		97.1	97.4	96.2	96.7	97.1	97.4	98.0	66.7	96.6	96.0	98.0	85.7	95.5	100.0	97.4
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		1.08	1.06	1.12	1.10	1.06	1.08	1.06	1.67	1.10	1.08	1.06	1.43	1.09	1.00	1.08
Rhino horn	Decreased	43.0	39.7	61.0	28.2	53.3	57.8	43.2	40.0	51.7	33.8	44.4	20.0	32.9	46.7	60.7
	Decreased somewhat	3.5	2.8	7.3	1.7	6.7	3.1	3.8	0	5.2	2.7	3.2	0	2.7	5.6	3.3
	Same as before 93	3.9	3.7	4.9	4.3	2.7	4.7	4.2	0	1.7	5.4	4.0	3.3	6.8	1.1	4.9
	Increase	0.8	0.5	2.4	0.9	0	1.6	0.8	0	0	1.4	0.8	0	1.4	0	1.6
	No response	48.8	53.3	24.4	65.0	37.3	32.8	47.9	60.0	41.4	56.8	47.6	76.7	56.2	46.7	29.5
Positive (+4/+5)		1.5	1.0	3.2	2.4	0	2.3	1.6	0	0	3.1	1.5	0	3.1	0	2.3
Neutral (+3)		7.6	8.0	6.5	12.2	4.3	7.0	8.1	0	2.9	12.5	7.7	14.3	15.6	2.1	7.0
Negative (+1/+2)		90.8	91.0	90.3	85.4	95.7	90.7	90.2	100.0	97.1	84.4	90.8	85.7	81.3	97.9	90.7
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		1.28	1.26	1.35	1.39	1.19	1.28	1.30	1.00	1.15	1.44	1.28	1.29	1.50	1.15	1.28
Pangolin	Decreased	47.3	43.9	65.9	40.2	49.3	57.8	48.7	30.0	46.6	39.2	52.4	10.0	49.3	46.7	62.3
	Decreased somewhat	15.6	15.9	14.6	13.7	17.3	17.2	16.1	10.0	13.8	17.6	15.3	23.3	8.2	21.1	13.1
	Same as before 93	12.5	12.1	14.6	12.0	14.7	10.9	12.3	15.0	13.8	14.9	10.5	6.7	12.3	14.4	13.1
	Increase	1.2	1.4	0	0.9	2.7	0	1.3	0	1.7	1.4	0.8	0	2.7	1.1	0
	No response	23.4	26.6	4.9	33.3	16.0	14.1	21.6	45.0	24.1	27.0	21.0	60.0	27.4	16.7	11.5
Positive (+4/+5)		1.5	1.9	0	1.3	3.2	0	1.6	0	2.3	1.9	1.0	0	3.8	1.3	0
Neutral (+3)		16.3	16.6	15.4	17.9	17.5	12.7	15.7	27.3	18.2	20.4	13.3	16.7	17.0	17.3	14.8
Negative (+1/+2)		82.1	81.5	84.6	80.8	79.4	87.3	43.2	72.7	79.5	77.8	85.7	83.3	79.2	81.3	85.2
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		1.58	1.61	1.46	1.60	1.65	1.45	1.57	1.73	1.61	1.70	1.49	1.92	1.57	1.64	1.44
Musk	Decreased	42.6	38.8	63.4	29.1	46.7	62.5	43.2	35.0	43.1	33.8	47.6	30.0	27.4	44.4	63.9
	Decreased somewhat	6.3	7.0	2.4	5.1	8.0	6.3	6.8	0	17.2	2.7	3.2	3.3	5.5	6.7	8.2
	Same as before 93	6.6	6.5	7.3	5.1	10.7	4.7	6.8	5.0	10.3	8.1	4.0	3.3	8.2	7.8	4.9
	Increase	1.2	1.4	0	1.7	1.3	0	1.3	0	0	2.7	0.8	3.3	1.4	1.1	0

	No response	43.4	46.3	26.8	59.0	33.3	26.6	41.9	60.0	29.3	52.7	44.4	60.6	57.5	40.0	23.0
Positive (+4/+5)		2.1	2.6	0	4.2	2.0	0	2.2	0	0	5.7	1.4	8.3	3.2	1.9	0
Neutral (+3)		11.7	12.2	10.0	12.5	16.0	6.4	11.7	12.5	14.6	17.1	7.2	8.3	19.4	13.0	6.4
Negative (+1/+2)		86.2	85.2	90.0	83.3	82.0	93.6	86.1	87.5	85.4	77.1	91.3	83.3	77.4	85.2	93.6
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		1.41	1.45	1.23	1.5	1.50	1.21	1.42	1.25	1.54	1.57	1.25	1.50	1.61	1.43	1.23
Bear gall bladder	Decreased	41.4	38.3	58.5	28.2	45.3	60.9	42.8	25.0	44.8	31.1	46.0	20.0	31.5	43.3	60.7
	Decreased somewhat	6.6	7.0	4.9	5.1	10.7	4.7	7.2	0	13.8	6.8	3.2	3.3	5.5	7.8	8.2
	Same as before 1993	3.5	2.8	7.3	3.4	2.7	4.7	3.4	5.0	5.2	2.7	3.2	0	6.8	1.1	4.9
	No response	48.4	51.9	29.3	63.2	41.3	29.7	46.6	70.0	36.2	59.5	47.6	76.7	56.2	47.8	26.2
Neutral (+3)		6.8	5.8	10.3	9.3	4.5	6.7	6.3	16.7	8.1	6.7	6.2	0	15.6	2.1	6.7
Negative (+1/+2)		93.2	94.2	89.7	90.7	95.5	93.3	93.7	83.3	91.9	93.3	93.8	100.0	84.4	97.9	93.3
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		1.27	1.26	1.28	1.33	1.27	1.20	1.26	1.33	1.38	1.30	1.18	1.14	1.44	1.19	1.24

Base: Total Respondents

Q. 4 Do you have following medicinal ingredients in your possession? If so, please describe the quantity in grams for each ingredient respectively. [unit: gram]

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Tiger bone	Yes	2.0	1.4	4.9	0	2.7	4.7	1.7	5.0	3.4	0	2.4	0	1.4	1.1	4.9
	No	73.4	73.8	73.2	69.2	82.7	70.3	75.0	55.0	82.8	63.5	75.0	66.7	69.9	78.9	72.1
	No response	24.6	24.8	22.0	30.8	14.7	25.0	23.3	40.0	13.8	36.5	22.6	33.3	28.8	20.0	23.0
Rhino horn	Yes	7.4	5.1	19.5	2.6	10.7	12.5	7.2	10.0	5.2	6.8	8.9	3.3	5.5	5.6	14.8
	No	69.5	71.5	61.0	68.4	77.3	62.5	70.8	55.0	82.8	58.1	70.2	63.3	69.9	75.6	62.3
	No response	23.0	23.4	19.5	29.1	12.0	25.0	22.0	35.0	12.1	35.1	21.0	33.3	24.7	18.9	23.0
Pangolin	Yes	45.7	41.1	70.7	36.8	53.3	53.1	47.0	30.0	36.2	43.2	51.6	36.7	34.2	52.2	55.7
	No	45.3	49.1	26.8	50.4	40.0	42.2	45.8	40.0	56.9	41.9	41.9	46.7	56.2	38.9	39.3
	No response	9.0	9.8	2.4	12.8	6.7	4.7	7.2	30.0	6.9	14.9	6.5	16.7	9.6	8.9	4.9
Musk	Yes	13.3	12.6	17.1	8.5	17.3	17.2	14.0	5.0	19.0	13.5	10.5	6.7	9.6	15.6	18.0
	No	64.8	65.4	63.4	63.2	68.0	64.1	65.3	60.0	72.4	54.1	67.7	66.7	61.6	65.6	65.6
	No response	21.9	22.0	19.5	28.2	14.7	18.8	20.8	35.0	8.6	32.4	21.8	26.7	28.8	18.9	16.4
Bear gall Bladder	Yes	8.2	7.5	12.2	2.6	10.7	15.6	8.5	5.0	8.6	6.8	8.9	0	5.5	8.9	14.8
	No	68.0	68.7	65.9	66.7	74.7	62.5	68.6	60.0	81.0	59.5	66.9	66.7	64.4	71.1	67.2
	No response	23.8	23.8	22.0	30.8	14.7	21.9	22.9	35.0	10.3	33.8	24.2	33.3	30.1	20.0	18.0

Q.4 The Amount of current stock on hand [Tiger bone]

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(5)	(3)	(2)	(0)	(2)	(3)	(4)	(1)	(2)	(0)	(3)	(0)	(1)	(1)	(3)
		100	100	100	0	100	100	100	100	100	0	100	0	100	100	100
Tiger bone stock	50-99g	40.0	33.3	50.0	0		66.7	50.0		50.0	0	33.3	0			66.7
	100-149g	20.0	33.3		0	50.0		25.0			0	33.3	0		100.0	
	200-299g	20.0		50.0	0		33.3	25.0		50.0	0	33.3	0			33.3
	More than 500g	20.0	33.3		0	50.0			100.0		0		0	100.0		
		100.0	100.0	100.0	0	100.0	100.0	100.0	100.0	100.0	0	100.0	0	100.0	100.0	100.0
Mean (g)		200.00	250.00	125.00	0	350.00	100.00	100.00	600.00	325.00	0	116.67	0	600.00	100.00	100.00

Base: Currently having stock

Q.4 The Amount of current stock on hand [Rhino horn]

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(19)	(11)	(8)	(3)	(8)	(8)	(17)	(2)	(3)	(2)	(11)	(1)	(4)	(5)	(9)
		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Rhino horn stock	Less than 50g	15.8	18.2	12.5	66.7		12.5	17.6			40.0	9.1	100.0		20.0	11.1
	50-99g	26.3	27.3	25.0	0	37.5	25.0	23.5	50.0	66.7	0	27.3	0	25.0	40.0	22.2
	200-299g	10.5	9.1	12.5	0	12.5	12.5	11.8	0	0	0	18.2	0	25.0	0	11.1
	300-499g	15.8	9.1	25.0	0	12.5	25.0	17.6	0	33.3	0	18.2	0	25.0	0	22.2
	More than 500g	31.6	36.4	25.0	33.3	37.5	25.0	29.4	50.0	0	60.0	27.3	0	25.0	40.0	33.3
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean (g)		342.11	358.09	320.13	190.00	424.88	316.38	344.12	325.00	166.67	452.20	339.91	40.00	295.00	350.60	391.89

Base: Currently having stock

Q.4 The Amount of current stock on hand [Pangolin]

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(114)	(86)	(28)	(42)	(39)	(33)	(108)	(6)	(20)	(32)	(62)	(11)	(24)	(45)	(34)
		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Pangolin stock	Less than 50g	5.3	4.7	7.1	2.4	10.3	3.0	5.6	0	5.0	3.1	6.5	9.1	0	8.9	2.9
	50-99g	2.6	2.3	3.6	2.4	2.6	3.0	2.8	0	5.0	3.1	1.6	9.1	0	2.2	2.9
	100-149g	7.9	9.3	3.6	11.9	7.7	3.0	7.4	16.7	0	12.5	8.1	9.1	12.5	8.9	2.9
	150-199g	0.9	1.2	0	2.4	0	0	0.9	0	0	0	1.6	0	0	2.2	0
	200-299g	16.7	18.6	10.7	21.4	17.9	9.1	17.6	0	20.0	15.6	16.1	9.1	29.2	17.8	8.8
	300- 499g	21.9	19.8	28.6	16.7	23.1	27.3	23.1	0	10.0	25.0	24.2	9.1	12.5	22.2	32.4
	More than 500g	44.7	44.2	46.4	42.9	38.5	54.5	42.6	83.3	60.0	40.6	41.9	54.5	45.8	37.8	50.0
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean (g)		432.69	415.13	486.64	387.55	406.38	521.24	429.88	483.33	479.45	431.06	418.45	402.00	407.71	397.84	506.38

Base: Currently having stock

Q.4 The Amount of current stock on hand [Musk]

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(32)	(25)	(7)	(9)	(12)	(11)	(31)	(1)	(10)	(10)	(12)	(2)	(6)	(13)	(11)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Musk stock	Less than 50g	46.9	44.0	57.1	22.2	66.7	45.5	48.4	0	40.0	40.0	58.3	50.0	16.7	69.2	36.4
	50-99g	18.8	24.0	0	33.3	16.7	9.1	19.4	0	20.0	10.0	25.0	0	50.0	7.7	18.2
	100-149g	12.5	12.0	14.3	11.1	8.3	18.2	12.9	0	20.0	10.0	8.3	0	16.7	7.7	18.2
	150-199g	3.1	4.0	0	0	0	9.1	3.2	0	0	0	8.3	0	16.7	0	0
	200-299g	3.1	0	14.3	0	0	9.1	3.2	0	0	10.0	0	0	0	0	9.1
	300- 499g	9.4	8.0	14.3	11.1	8.3	9.1	6.5	100.0	20.0	10.0	0	0	0	7.7	18.2
	More than 500g	6.3	8.0	0	22.2	0	0	6.5	0	0	20.0	0	50.0	0	7.7	0
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean (g)		132.78	143.68	93.86	289.11	56.67	87.91	127.39	300.00	101.40	274.10	41.17	513.50	72.33	125.00	105.73

Base: Currently having stock

Q.4 The Amount of current stock on hand [Bear gall bladder]

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(19)	(14)	(5)	(2)	(7)	(10)	(18)	(1)	(4)	(5)	(10)	(0)	(3)	(7)	(9)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0	100.0	100.0	100.0
Bear gall bladder stock	Less than 50g	42.1	42.9	40.0	50.0	57.1	30.0	44.4	0	50.0	20.0	50.0	0	66.7	57.1	22.2
	50-99g	21.1	28.6	0	0	14.3	30.0	22.2	0	0	60.0	10.0	0	33.3	14.3	22.2
	100-149g	21.1	7.1	60.0	0	14.3	30.0	22.2	0	0	20.0	30.0	0	0	14.3	33.3
	200-299g	10.5	14.3	0	0	14.3	10.0	11.1	0	25.0	0	10.0	0	0	0	22.2
	300-499g	5.3	7.1	0	50.0	0	0	0	100.0	25.0	0	0	0	0	14.3	0
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0	100.0	100.0	100.0
Mean (g)		79.00	84.71	63.00	155.00	69.43	70.50	66.72	300.00	146.25	52.60	65.30	0	26.67	81.14	94.78

Base: Currently having stock

Q. 5 Have you used substitutes with similar efficacy for the following medicinal materials? If so, what were those substitute materials? Please answer for each medicinal material respectively

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Tiger bone	Have used	4.7	5.1	2.4	5.1	5.3	3.1	5.1	0	5.2	2.7	5.6	0	6.8	4.4	3.3
	Have never used	72.3	71.0	80.5	68.4	74.7	76.6	72.9	65.0	75.9	66.2	74.2	70.0	65.8	75.6	77.0
	No response	23.0	23.8	17.1	26.5	20.0	20.3	22.0	35.0	19.0	31.1	20.2	30.0	27.4	20.0	19.7
Rhino horn	Have used	36.7	37.9	31.7	42.7	32.0	31.3	36.9	35.0	41.4	37.8	33.9	20.0	52.1	31.1	34.4
	Have never used	47.3	46.3	53.7	41.9	53.3	50.0	48.3	35.0	46.6	40.5	51.6	56.7	35.6	53.3	47.5
	No response	16.0	15.9	14.6	15.4	14.7	18.8	14.8	30.0	12.1	21.6	14.5	23.3	12.3	15.6	18.0
Pangolin	Have used	7.4	8.4	2.4	10.3	6.7	3.1	7.6	5.0	6.9	5.4	8.9	0	16.4	5.6	3.3
	Have never used	78.5	76.6	90.2	70.9	84.0	85.9	79.2	70.0	82.8	74.3	79.0	73.3	68.5	82.2	86.9
	No response	14.1	15.0	7.3	18.8	9.3	10.9	13.1	25.0	10.3	20.3	12.1	26.7	15.1	12.2	9.8
Musk	Have used	14.5	15.0	12.2	16.2	13.3	12.5	14.4	15.0	20.7	12.2	12.9	3.3	20.5	12.2	14.8
	Have never used	66.4	65.9	70.7	61.5	70.7	70.3	67.4	55.0	67.2	63.5	67.7	66.7	58.9	72.2	67.2
	No response	19.1	19.2	17.1	22.2	16.0	17.2	18.2	30.0	12.1	24.3	19.4	30.0	20.5	15.6	18.0
Bear gall bladder	Have used	7.0	7.0	7.3	6.8	6.7	7.8	7.6	0	15.5	4.1	4.8	0	9.6	5.6	9.8
	Have never used	70.3	69.6	75.6	66.7	73.3	73.4	70.8	65.0	70.7	64.9	73.4	66.7	64.4	74.4	72.1
	No response	22.7	23.4	17.1	26.5	20.0	18.8	21.6	35.0	13.8	31.1	21.8	33.3	26.0	20.0	18.0

Base: Total Respondents

Q.5 Substitute for Tiger bone

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(12)	(11)	(1)	(6)	(4)	(2)	(12)	(0)	(3)	(2)	(7)	(0)	(5)	(4)	(2)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	0	100.0	100.0	100.0	0	100.0	100.0	100.0
Multi-response	*1* Cat bone	25.0	27.3	0	33.3	25.0	0	25.0	0	33.3	0	28.6	0	20.0	25.0	0
	2 Acanthopanax bark	16.7	18.2	0	16.7	25.0	0	16.7	0	0	50.0	14.3	0	20.0	25.0	0
	3 Ox horn	8.3	9.1	0	16.7	0	0	8.3	0	33.3	0	0	0	20.0	0	0
	4 Lindera strychnifolia	8.3	9.1	0	0	25.0	0	8.3	0	0	50.0	0	0	0	25.0	0
	5 Deer horn	8.3	0	100.0	0	0	50.0	8.3	0	0	0	14.3	0	0	0	50.0
	6 Ox bezoar	8.3	9.1	0	16.7	0	0	8.3	0	0	0	14.3	0	20.0	0	0
	7 Ox bow	8.3	9.1	0	16.7	0	0	8.3	0	0	50.0	0	0	20.0	0	0
	8 felid	8.3	9.1	0	16.7	0	0	8.3	0	33.3	0	0	0	20.0	0	0
	9 Ox tendon	8.3	9.1	0	0	25.0	0	8.3	0	0	0	14.3	0	0	25.0	0
	10 Horse bone	8.3	9.1	0	0	0	50.0	8.3	0	0	0	14.3	0	0	0	50.0
	11 Eucommia ulmoides	8.3	9.1	0	16.7	0	0	8.3	0	33.3	0	0	0	20.0	0	0
	12 Eusocmmia cortex with Ostreae concha	8.3	9.1	0	0	25.0	0	8.3	0	0	0	14.3	0	0	25.0	0

Base: Respondents who claimed to have used substitute for tiger bone.

Q.5 Substitute for Rhino horn

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(94	(81)	(13)	(50)	(24)	(20)	(87)	(7)	(24)	(28)	(42)	(6)	(38)	(28)	(21)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Multi-response	*1* Ox bow	47.9	50.6	30.8	58.0	33.3	40.0	48.3	42.9	45.8	46.4	50.0	66.7	63.2	25.0	47.6
	2 Suh-gak-bang	14.9	14.8	15.4	8.0	20.8	25.0	12.6	42.9	20.8	17.9	9.5	16.7	7.9	14.3	28.6
	3 Cimicifuga heracleifolias	7.4	6.2	15.4	8.0	4.2	10.0	8.0	0	4.2	7.1	9.5	0	10.5	7.1	4.8
	4 Woo-gak-bang	6.4	7.4	0	6.0	12.5	0	6.9	0	16.7	3.6	2.4	0	7.9	7.1	4.8
	5 Water buffalo horn	5.3	3.7	15.4	2.0	8.3	10.0	5.7	0	4.2	7.1	4.8	0	0	7.1	9.5
	6 Rehmannia glutinosa	4.3	4.9	0	8.0	0	0	3.4	14.3	8.3	3.6	2.4	16.7	7.9	0	0
	7 Antelope horn	4.3	4.9	0	6.0	4.2	0	4.6	0	8.3	3.6	2.4	0	5.3	7.1	0
	8 Water buffalo horn	3.2	2.5	7.7	4.0	0	5.0	3.4	0	0	0	7.1	0	2.6	7.1	0
	9 Black ox bow	3.2	1.2	15.4	0	4.2	10.0	3.4	0	4.2	0	4.8	0	0	3.6	9.5
	10 Bang-suh-gak	3.2	2.5	7.7	2.0	4.2	5.0	3.4	0	4.2	0	4.8	0	2.6	7.1	0
	11 Skullcap	2.1	2.5	0	0	8.3	0	2.3	0	0	3.6	2.4	0	0	7.1	0
	12 Mok-hyang	1.1	1.2	0	2.0	0	0	0	14.3	0	0	2.4	0	2.6	0	0
	13 Gyel-myung-ja	1.1	1.2	0	0	4.2	0	1.1	0	0	0	2.4	0	0	3.6	0
	14 Chi-ja	1.1	1.2	0	0	4.2	0	1.1	0	0	0	2.4	0	0	3.6	0
	15 Woo-gak-kyung	1.1	0	7.7	0	0	5.0	1.1	0	0	3.6	0	0	0	0	4.8
	16 Arrowroot	1.1	1.2	0	2.0	0	0	1.1	0	0	3.6	0	0	0	3.6	0
	17 Su-suh-gak	1.1	1.2	0	2.0	0	0	1.1	0	0	0	2.4	0	2.6	0	0
	18 Woo-suh-gak	1.1	1.2	0	2.0	0	0	1.1	0	0	3.6	0	0	0	3.6	0
	19 Dae-je	1.1	1.2	0	0	4.2	0	1.1	0	0	0	2.4	0	0	3.6	0

Base: Respondents who claimed to have used substitute for rhino horn.

Q. 5 Substitute for Pangolin

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(19)	(18)	(1)	(12)	(5)	(2)	(18)	(1)	(4)	(4)	(11)	(0)	(12)	(5)	(2)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0	100.0	100.0	100.0
Multi-response	*1* So-gak-ja	63.2	66.7	0	66.7	80.0	0	66.7	0	75.0	50.0	63.6	0	75.0	60.0	0
	2 Lonicera japonica	10.5	11.1	0	8.3	20.0	0	11.1	0	0	50.0	0	0	8.3	20.0	0
	3 Gu-pan	5.3	0	100.0	0	0	50.0	5.6	0	0	0	9.1	0	0	0	50.0
	4 In-Dong-Deung	5.3	5.6	0	8.3	0	50.0	0	100.0	25.0	0	0	0	0	20.0	0
	5 Cheon-woo-sul	5.3	5.6	0	8.3	0	0	5.6	0	0	0	9.1	0	8.3	0	0
	6 Acanthopanax bark	5.3	5.6	0	8.3	0	0	5.6	0	0	0	9.1	0	8.3	0	0
	7 Tong-cho	5.3	5.6	0	8.3	0	0	5.6	0	0	25.0	0	0	8.3	0	0
	8 cheon-su-keun	5.3	5.6	0	0	0	0	5.6	0	0	0	9.1	0	0	0	50
	9 Mok-dong	5.3	5.6	0	8.3	0	0	5.6	0	0	0	9.1	0	8.3	0	0

Base: Respondents who claimed to have used substitute for pangolin.

Q.5 Substitute for musk

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(37)	(32)	(5)	(19)	(10)	(8)	(34)	(0)	(12)	(9)	(16)	(1)	(15)	(11)	(9)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Multi-response	*1* Elecampane	59.5	65.6	20.0	68.4	60.0	37.5	58.8	66.7	75.0	44.4	56.3	100.0	66.7	72.7	33.3
	2 Aquilaria agallocha	37.8	43.8	0	52.6	30.0	12.5	38.2	33.3	50.0	33.3	31.3	0	53.3	27.3	22.2
	3 chrysanthemum makinoi	13.5	9.4	40.0	5.3	20.0	25.0	14.7	0	16.7	22.2	6.3	0	6.7	9.1	22.2
	4 artificial musk	5.4	6.3	0	5.3	10.0	0	5.9	0	8.3	11.1	0	0	6.7	9.1	0
	5 Dam-mok-hyang	5.4	3.1	20.0	0	0	25.0	5.9	0	0	0	12.5	0	0	0	22.2
	6 Kwak-hyang	2.7	3.1	0	0	10.0	0	2.9	0	0	0	6.3	0	0	9.1	0
	7 Synthetic musk	2.7	0	20.0	0	0	12.5	2.9	0	0	0	6.3	0	0	0	11.1

Base: Respondents who claimed to have used substitute for musk.

Q.5 Substitute for bear gall bladder

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(18)	(15)	(3)	(8)	(5)	(5)	(18)	(0)	(9)	(3)	(6)	(0)	(7)	(5)	(6)
		100	100	100	100	100	100	100	0	100	100	100	0	100	100	100
Multi-response	*1* Pig gallbladder	44.4	53.3	0	50.0	80.0	0	44.4	0	55.6	33.3	33.3	0	42.9	100.0	0
	2 Ox gallbladder	16.7	20.0	0	25.0	20.0	0	16.7	0	22.2	0	16.7	0	28.6	20.0	0
	3 Jae-dam	5.6	0	33.3	0	0	20.0	5.6	0	0	33.3	0	0	0	0	16.7
	4 Mixed gallbladder	5.6	6.7	0	0	20.0	0	5.6	0	11.1	0	0	0	0	0	16.7
	5 Je-cho	5.6	6.7	0	12.5	0	0	5.6	0	0	33.3	0	0	14.3	0	0
	6 Dap-dam	5.6	6.7	0	0	0	20.0	5.6	0	11.1	0	0	0	0	0	16.7
	7 Dog gallbladder	5.6	0	33.3	0	0	20.0	5.6	0	0	0	16.7	0	0	0	16.7
	8 Je-dam	5.6	6.7	0	0	0	20.0	5.6	0	11.1	0	0	0	0	0	16.7
	9 In-jin	5.6	6.7	0	12.5	0	0	5.6	0	11.1	0	0	0	14.3	0	0
	10 Sam-rong	5.6	6.7	0	12.5	0	0	5.6	0	11.1	0	0	0	14.3	0	0
	11 Cheong-woo	5.6	6.7	0	12.5	0	0	5.6	0	0	0	16.7	0	14.3	0	0
	12 Boo-gak	5.6	6.7	0	12.5	0	0	5.6	0	0	0	16.7	0	14.3	0	0
	13 Similar medicine	5.6	0	33.3	0	0	20.0	5.6	0	0	0	16.7	0	0	0	16.7

Base: Respondents who claimed to have used substitute for bear gall bladder.

Q.6 Please select the response which best describes the availability of substitutes for the following medicinal ingredients

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Tiger bone	Indispensable	7.4	5.6	17.1	6.0	2.7	15.6	8.1	0	5.2	6.8	8.9	3.3	5.5	4.4	16.4
	Can be substituted, but original is better	24.6	28.5	4.9	32.5	20.0	15.6	25.4	15.0	24.1	27.0	23.4	26.7	35.6	23.3	13.1
	Can be easily substituted	6.3	6.1	4.9	5.1	8.0	6.3	6.4	5.0	12.1	4.1	4.8	6.7	4.1	5.6	9.8
	Not sure	49.2	46.7	63.4	43.6	54.7	53.1	48.7	55.0	51.7	43.2	51.6	50.0	41.1	53.3	52.5
	No response	12.5	13.1	9.8	12.8	14.7	9.4	11.4	25.0	6.9	18.9	11.3	13.3	13.7	13.3	8.2
Rhino horn	Indispensable	15.2	13.1	24.4	13.7	9.3	25.0	15.7	10.0	24.1	8.1	15.3	16.7	11.0	12.2	24.6
	Can be substituted, but original is better	41.8	44.4	29.3	45.3	48.0	28.1	41.5	45.0	36.2	51.4	38.7	23.3	56.2	44.4	31.1
	Can be easily substituted	11.3	11.2	12.2	11.1	8.0	15.6	11.4	10.0	12.1	8.1	12.9	10.0	6.8	13.3	14.8
	Not sure	21.9	21.5	24.4	19.7	24.0	23.4	22.0	20.0	20.7	14.9	26.6	36.7	16.4	21.1	21.3
	No response	9.8	9.8	9.8	10.3	10.7	7.8	9.3	15.0	6.9	17.6	6.5	13.3	9.6	8.9	8.2
Pangolin	Indispensable	25.0	20.6	46.3	21.4	17.3	40.6	26.3	10.0	24.1	21.6	27.4	23.3	15.1	24.4	37.7
	Can be substituted, but original is better	30.9	34.1	14.6	32.5	37.3	20.3	32.2	15.0	29.3	40.5	25.8	20.0	43.8	28.9	24.6
	Can be easily substituted	6.3	7.0	2.4	6.8	8.0	3.1	5.5	15.0	8.6	2.7	7.3	10.0	5.5	6.7	4.9
	Not sure	31.3	31.3	31.7	29.9	33.3	31.3	29.7	50.0	34.5	23.0	34.7	36.7	28.8	33.3	27.9
	No response	6.6	7.0	4.9	9.4	4.0	4.7	6.4	10.0	3.4	12.2	4.8	10.0	6.8	6.7	4.9
Musk	Indispensable	32.4	31.8	34.1	34.2	29.3	32.8	33.1	25.0	39.7	35.1	27.4	33.3	31.5	32.2	34.4
	Can be substituted, but original is better	30.1	32.2	19.5	29.1	34.7	26.6	30.1	30.0	31.0	31.1	29.0	13.3	37.0	32.2	26.2
	Can be easily substituted	3.1	3.3	2.4	3.4	1.3	4.7	3.0	5.0	3.4	4.1	2.4	6.7	1.4	3.3	3.3
	Not sure	25.4	23.8	34.1	23.1	26.7	28.1	25.4	25.0	24.1	13.5	33.1	40.0	17.8	24.4	27.9
	No response	9.0	8.9	9.8	10.3	8.0	7.8	8.5	15.0	1.7	16.2	8.1	6.7	12.3	7.8	8.2
Bear gall bladder	Indispensable	22.3	22.4	22.0	23.1	21.3	21.9	22.0	25.0	25.9	21.6	21.0	26.7	21.9	21.1	21.3
	Can be substituted, but original is better	32.0	33.6	24.4	31.6	34.7	29.7	32.6	25.0	37.9	32.4	29.0	13.3	39.7	32.2	32.8
	Can be easily substituted	5.1	5.6	0	5.1	5.3	4.7	5.1	5.0	6.9	5.4	4.0	6.7	4.1	5.6	4.9
	Not sure	30.1	27.6	43.9	28.2	26.7	37.5	30.1	30.0	27.6	23.0	35.5	43.3	20.5	30.0	34.4
	No response	10.5	10.7	9.8	12.0	12.0	6.3	10.2	15.0	1.7	17.6	10.5	10.0	13.7	11.1	6.6

Base: Total respondents

Q. 7 Do you think research in substitutes for medicinal ingredients such as tiger bone, rhinoceros horn, pangolin scale, musk, and bear gallbladder is necessary?

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	Necessary	86.7	88.8	78.0	90.6	86.7	79.7	86.9	85.0	87.9	87.8	85.5	90.0	86.3	91.1	78.7
	Not necessary	10.9	8.9	19.5	6.0	12.0	18.8	11.0	10.0	12.1	8.1	12.1	10.0	6.8	8.9	19.7
	No response	2.3	2.3	2.4	3.4	1.3	1.6	2.1	5.0	0	4.1	2.4	0	6.8	0	1.6

Base: Total respondents

Q. 7a The reason why the substitutes development is necessary

	Total	Occupation		Age			Gender		Working place			Working experience			
		Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %	(222)	(190)	(32)	(106)	(65)	(51)	(205)	(17)	(51)	(65)	(106)	(27)	(63)	(82)	(48)
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1 to protect from the extinction	17.1	18.4	9.4	17.0	23.1	9.8	17.6	11.8	19.6	18.5	15.1	18.5	19.0	18.3	12.5
2 to protect flora/fauna	13.1	12.1	18.8	12.3	12.3	15.7	12.7	17.6	13.7	12.3	13.2	14.8	9.5	14.6	14.6
3 No response	11.3	11.6	9.4	11.3	13.8	7.8	11.7	5.9	13.7	18.5	5.7	14.8	12.7	6.1	14.6
4 research is necessary due to the good efficacy	9.5	10.5	3.1	12.3	7.7	5.9	8.8	17.6	5.9	13.8	8.5	14.8	7.9	11.0	6.3
5 research is necessary because of curing effect	8.6	6.8	18.8	5.7	7.7	15.7	9.3	0	2.0	3.1	15.1	0	9.5	8.5	12.5
6 because of availability of the substance with similar efficacy	6.8	5.8	12.5	4.7	7.7	9.8	6.3	11.8	3.9	6.2	8.5	0	4.8	11.0	6.3
7 because it is difficult to obtain	5.9	6.3	3.1	5.7	6.2	5.9	5.9	5.9	9.8	4.6	4.7	7.4	4.8	7.3	4.2
8 to protect nature	5.0	5.8	0	7.5	4.6	0	4.9	5.9	2.0	1.5	8.5	11.1	6.3	3.7	2.1
9 for the sake of unique efficacy	4.1	4.2	3.1	4.7	1.5	5.9	3.9	5.9	2.0	4.6	4.7	3.7	3.2	2.4	6.3
10 research is necessary to sustainable control of supply and demand	3.2	2.6	6.3	2.8	3.1	3.9	3.4	0	5.9	1.5	2.8	0	4.8	2.4	4.2
11 research is necessary because it is indispensable in clinical trials	3.2	3.2	3.1	3.8	1.5	3.9	2.9	5.9	9.8	0	1.9	3.7	3.2	3.7	2.1
12 due to the expensive price of the substance	3.2	3.7	0	3.8	1.5	3.9	3.4	0	7.8	0	2.8	3.7	6.3	0	4.2
13 because of the limited amount of the resources	2.7	3.2	0	5.7	0	0	2.4	5.9	2.0	3.1	2.8	0	3.2	4.9	0
14 because it is the valuable medicinal material	2.3	2.1	3.1	2.8	0	3.9	2.4	0	2.0	0	3.8	7.4	1.6	0	4.2
15 due to the legal regulation	2.3	2.6	0	2.8	1.5	2.0	2.4	0	0	1.5	3.8	3.7	4.8	1.2	0
16 because it is needed for the prescription	2.3	2.6	0	2.8	1.5	2.0	2.0	5.9	0	4.6	1.9	3.7	1.6	3.7	0
17 due to the increasing demand and decreasing supply	1.8	1.6	3.1	0	3.1	3.9	2.0	0	3.9	0	1.9	3.7	0	2.4	2.1
18 due to the restricted supply	1.8	2.1	0	2.8	1.5	0	2.0	0	0	1.5	2.8	0	6.3	0	0

19 because we need to find the substance with the same ingredient	1.4	1.6	0	0.9	1.5	2.0	1.5	0	2.0	1.5	0.9	0	1.6	1.2	2.1
20 because the original substance cannot be obtained	1.4	1.6	0	0.9	3.1	0	1.5	0	2.0	1.5	0.9	3.7	0	1.2	2.1
21 because of lack of substitute up to now	0.9	0.5	3.1	0.9	0	2.0	0.5	5.9	0	1.5	0.9	0	0	1.2	2.1
22 because the medicinal material is used widely	0.9	0.5	3.1	0	1.5	2.0	1.0	0	0	1.5	0.9	0	0	1.2	2.1
23 for the development of the Oriental Medicine	0.9	0.5	3.1	0.9	1.5	2.0	1.0	0	0	0	1.9	0	0	1.2	0
24 to avoid international criticism	0.9	1.1	0	0	1.5	0	1.0	0	0	1.5	0.9	0	0	2.4	0
25 it seems to be appropriate to develop and use the substitute	0.9	0.5	3.1	0	1.5	2.0	1.0	0	2.0	1.5	0	0	0	2.4	0
26 it is convenient to have substitutes for clinical trials	0.9	0.5	3.1	0.9	1.5	0	1.0	0	0	1.5	0.9	3.7	0	1.2	0
27 to clarify the efficacy	0.9	1.1	0	0.9	1.5	0	1.0	0	2.0	0	0.9	0	1.6	1.2	0
28 because it is the excellent traditional medicinal material	0.5	0.5	0	0	0	2.0	0.5	0	0	0	0.9	0	0	1.2	0
29 to develop rare medicinal materials	0.5	0.5	0	0	1.5	0	0.5	0	0	1.5	0	0	0	1.2	0
30 to obtain academic objectivity	0.5	0.5	0	0	0	2.0	0.5	0	2.0	0	0	0	0	0	2.1
31 because it is the global trend	0.5	0.5	0	0.9	0	0	0	5.9	2.0	0	0	0	1.6	0	0
32 to enhance the health promotion	0.5	0	3.1	0	0	2.0	0.5	0	0	0	0.9	0	0	0	2.1
33 to prevent diseases	0.5	0	3.1	0	0	2.0	0.5	0	0	0	0.9	0	0	0	2.1
34 because the clients want to have it	0.5	0.5	0	0.9	0	0	0.5	0	0	0	0.9	0	1.6	0	0
35 because consistent illegal activity is not desirable	0.5	0.5	0	0	1.5	0	0.5	0	0	0	0.9	0	0	1.2	0
36 substitutes should be used after the verification of the efficacy	0.5	0.5	0	0	1.5	0	0.5	0	2.0	0	0	0	0	1.2	0
37 not because substitutes are needed but because variation of the treatment method is needed.	0.5	0.5	0	0	1.5	0	0.5	0	2.0	0	0	0	1.6	0	0

Base: Respondents who answered “necessary”

Q. 7b The reason why the substitutes development is not necessary

	Total	Occupation		Age			Gender		Working place			Working experience			
		Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %	(28)	(19)	(8)	(7)	(9)	(12)	(26)	(2)	(7)	(6)	(15)	(3)	(5)	(8)	(12)
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1 because it is impossible for any substance to be substitutes	25.0	15.8	37.5	28.6	11.1	33.3	26.9	0	14.3	33.3	26.7	0	40.0	12.5	33.3
2 because it is not the indispensable medicinal substance	14.3	21.1	0	28.6	22.2	0	15.4	0	14.3	33.3	6.7	33.3	20.0	25.0	0
3 not necessary because there are similar medicinal materials	14.3	15.8	12.5	0	44.4	0	15.4	0	14.3	16.7	13.3	0	0	25.0	16.7
4 no response	14.3	15.8	12.5	0	22.2	16.7	15.4	0	14.3	16.7	13.3	33.3	0	25.0	8.3
5 because it can be replaced with other prescription	10.7	10.5	12.5	14.3	0	16.7	7.7	50.0	14.3	0	13.3	0	20.0	12.5	8.3
6 because substitutes have significantly different efficacy	7.1	5.3	12.5	0	0	16.7	7.7	0	0	0	13.3	0	0	0	16.7
7 substitutes research is not necessary because medicinal ingredient is not the same	7.1	5.3	12.5	14.3	0	8.3	7.7	0	0	0	13.3	0	20.0	0	8.3
8 because efficacy does not show very well	3.6	5.3	0	0	0	8.3	3.8	0	14.3	0	0	0	0	0	8.3
9 not necessary because there are other good medicinal materials	3.6	5.3	0	14.3	0	0	0	50.0	14.3	0	0	33.3	0	0	0

Base: Respondents who answered “not necessary”

Q.8 Which form of substitute do you prefer as substitutes for tiger bone, rhinoceros horn, pangolin scale, musk, and bear gallbladder?

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Preferred substitutes	Don't care	66.8	66.8	68.3	65.0	69.3	67.2	67.4	60.0	67.2	67.6	66.1	66.7	65.8	72.2	60.7
	Prefer plant substitutes	21.5	21.5	22.0	22.2	20.0	21.9	20.8	30.0	20.7	20.3	22.6	23.3	20.5	18.9	24.6
	Prefer animal substitutes	9.8	10.3	7.3	11.1	9.3	7.8	9.7	10.0	10.3	9.5	9.7	10.0	12.3	6.7	11.5
	No response	1.6	1.4	2.4	1.7	1.3	1.6	1.7	0	0	2.7	1.6	0	1.4	2.2	1.6
	Indispensable with chemical	0.4	0	0	0	0	1.6	0.4	0	1.7	0	0	0	0	0	1.6

Base: Total respondents

Q.9 If the price and efficacy of available substitutes were shown to be similar to medicinal ingredients such as tiger bone, rhinoceros horn, pangolin scale, musk, and bear gallbladder, what would you prescribe? Please select one of the following.

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Using-Intention of substitutes	Using substitutes immediately	51.6	53.3	43.9	53.0	49.3	51.6	51.3	55.0	46.6	54.1	52.4	53.3	52.1	48.9	52.5
	Until stock runs out	35.9	34.1	46.3	29.9	45.3	35.9	36.4	30.0	39.7	31.1	37.1	33.3	32.9	41.1	34.4
	Prescribing original	9.4	10.3	4.9	13.7	4.0	7.8	9.3	10.0	12.1	8.1	8.9	10.0	13.7	6.7	8.2
	No response	2.3	1.9	4.9	3.4	0	3.1	2.1	5.0	0	6.8	0.8	3.3	1.4	2.2	3.3
	Don't have using-intention with some exception	0.4	0.5	0	0	1.3	0	0.4	0	0	0	0.8	0	0	1.1	0
	Musk/Rhino horn is indispensable	0.4	0	0	0	0	1.6	0.4	0	1.7	0	0	0	0	0	1.6

Base: Total respondents

Q.10 What do you think the impact of continued use of these materials (tiger bone, rhinoceros horn, pangolin scale, musk, bear gallbladder) by the TEAM industry would be on the wild populations of these species?

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Affect on endangered wild species	The effect will be detrimental to the species	72.3	73.8	65.9	71.8	74.7	70.3	71.6	80.0	69.0	67.6	76.6	70.0	71.2	74.4	70.5
	No great impact if the trade is regulated	27.3	26.2	31.7	28.2	25.3	28.1	28.0	20.0	31.0	31.1	23.4	30.0	28.8	25.6	27.9
	No great impact as there are plenty	0.4	0	2.4	0	0	1.6	0.4	0	0	1.4	0	0	0	0	1.6

Base: Total respondents

Q.11 How important do you think it is to protect wild species (tiger, rhino, pangolin, musk deer, and bear) that are used for medicinal purposes?

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Importance on preserving endangered wild species	(+1) Not important at all	0.8	0.5	2.4	0.9	0	1.6	0.8	0	0	0	1.6	0	1.4	0	1.6
	(+2) Not important	0.4	0	2.4	0	0	1.6	0.4	0	0	1.4	0	0	0	0	1.6
	(+3) So-so	3.1	2.8	4.9	3.4	0	6.3	3.4	0	1.7	5.4	2.4	0	1.4	3.3	6.6
	(+4) Important	48.8	49.5	46.3	48.7	48.0	50.0	47.9	60.0	50.0	52.7	46.0	46.7	50.7	51.1	45.9
	(+5) Very important	46.5	46.7	43.9	46.2	52.0	40.6	47.0	40.0	48.3	39.2	50.0	53.3	45.2	45.6	44.3
	No response	0.4	0.5	0	0.9	0	0	0.4	0	0	1.4	0	0	1.4	0	0
Positive (+4/+5)		95.7	96.7	90.2	95.7	100.0	90.6	95.3	100.0	98.3	93.2	96.0	100.0	97.2	96.7	90.2
Negative (+1/+2)		4.3	3.3	9.8	4.3	0	9.4	4.7	0	1.7	6.8	4.0	0	2.8	3.3	9.8
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean		4.40	4.43	4.27	4.41	4.52	4.27	4.40	4.40	4.47	4.32	4.43	4.53	4.40	4.42	4.30

Base: Total respondents

Q.11a Importance on preserving the banned wildlife species

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(244)	(206)	(37)	(111)	(75)	(58)	(224)	(20)	(57)	(68)	(119)	(30)	(70)	(87)	(55)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Multi-responses	Should live in harmony with all living	65.6	66.0	64.9	64.0	77.3	53.4	64.7	75.0	54.4	61.8	73.1	56.7	65.7	73.6	56.4
	Species are endangered/threatened	54.1	51.9	67.6	53.2	45.3	67.2	55.4	40.0	52.6	47.1	58.8	53.3	52.9	51.7	60.0
	Pressure from western environmental NGOs	3.7	3.9	0	4.5	2.7	3.4	3.6	5.0	7.0	4.4	1.7	6.7	2.9	3.4	3.6
	For more effective treatment	1.2	1.5	0	0.9	2.7	0	1.3	0	1.8	0	1.7	3.3	0	2.3	0
	Political pressure from the USA	0.8	1.0	0	0.9	1.3	0	0.9	0	1.8	1.5	0	3.3	0	1.1	0
	Let them be natural	0.8	0.5	2.7	0.9	0	1.7	0.9	0	0	1.5	0.8	0	1.4	0	1.8
	For going smoothly of supplying medicinal materials	0.8	1.0	0	0.9	1.3	0	0.9	0	1.8	0	0.8	0	1.4	1.1	0

Base: Respondents who answered “important/very important”

Q.12 In your opinion, what are the major factors causing these wild species to be endangered? Please number the factors in order of importance with "1" being the most important.

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Habitat destruction	*1*	58.2	62.1	36.6	60.7	66.7	43.8	59.3	45.0	62.1	48.6	62.1	56.7	67.1	61.1	42.6
	2	20.7	21.0	19.5	25.6	10.7	23.4	19.9	30.0	17.2	27.0	18.5	23.3	24.7	16.7	21.3
	3	5.1	4.2	9.8	1.7	8.0	7.8	5.5	0	5.2	2.7	6.5	0	2.7	7.8	6.6
	4	11.7	9.3	24.4	8.5	10.7	18.8	10.6	25.0	8.6	16.2	10.5	13.3	4.1	10.0	23.0
	5	1.6	1.4	2.4	0.9	2.7	1.6	1.7	0	3.4	1.4	0.8	3.3	0	1.1	3.3
	9	2.7	1.9	7.3	2.6	1.3	4.7	3.0	0	3.4	4.1	1.6	3.3	1.4	3.3	3.3
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		1.74	1.64	2.32	1.60	1.70	2.07	1.72	2.05	1.70	1.90	1.67	1.79	1.43	1.69	2.20
Pollution	*1*	12.1	13.1	7.3	18.8	6.7	6.3	11.0	25.0	10.3	12.2	12.9	23.3	17.8	10.0	3.3
	2	31.3	34.1	14.6	31.6	42.7	17.2	32.6	15.0	32.8	23.0	35.5	36.7	32.9	36.7	19.7
	3	14.5	15.0	12.2	17.1	6.7	18.8	14.0	20.0	12.1	17.6	13.7	16.7	20.5	6.7	18.0
	4	12.9	11.2	22.0	11.1	10.7	18.8	12.7	15.0	13.8	12.2	12.9	10.0	9.6	15.6	14.8
	5	25.0	23.4	34.1	17.9	30.7	31.3	25.0	25.0	25.9	29.7	21.8	10.0	16.4	28.9	36.1
	6	0.4	0.5	0	0.9	0	0	0.4	0	0	0	0.8	0	1.4	0	0
	9	3.9	2.8	9.8	2.6	2.7	7.8	4.2	0	5.2	5.4	2.4	3.3	1.4	2.2	8.2
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		3.09	2.99	3.68	2.80	3.16	3.56	3.10	3.00	3.13	3.26	2.98	2.45	2.78	3.17	3.66
Harvest for food	*1*	4.3	3.7	7.3	3.4	2.7	7.8	3.8	10.0	0	5.4	5.6	3.3	2.7	3.3	8.2
	2	10.2	9.3	14.6	8.5	10.7	12.5	10.6	5.0	6.9	9.5	12.1	10.0	6.8	8.9	16.4
	3	30.5	30.8	29.3	23.1	41.3	31.3	30.1	35.0	32.8	33.8	27.4	20.0	24.7	38.9	27.9
	4	23.8	25.7	14.6	27.4	21.3	20.3	25.0	10.0	31.0	20.3	22.6	30.0	32.9	16.7	21.3
	5	25.8	26.6	22.0	35.0	18.7	17.2	24.6	40.0	22.4	24.3	28.2	33.0	31.5	27.8	13.1
	6	0.4	0.5	0	0	1.3	0	0.4	0	0	0	0.8	0	0	1.1	0
	9	5.1	3.3	12.2	2.6	4.0	10.9	5.5	0	6.9	6.8	3.2	3.3	1.4	3.3	13.1
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		3.61	3.66	3.33	3.84	3.49	3.30	3.61	3.65	3.74	3.52	3.60	3.83	3.85	3.62	3.17
Trade for medicinal purposes	*1*	12.1	7.9	34.1	7.7	10.7	21.9	13.1	0	15.5	13.5	9.7	13.3	2.7	11.1	24.6
	2	16.0	17.3	9.8	15.4	17.3	15.6	14.4	35.0	17.2	16.2	15.3	13.3	16.4	15.6	16.4
	3	20.7	22.4	12.2	24.8	21.3	12.5	21.2	15.0	17.2	16.2	25.0	20.0	26.0	22.2	13.1
	4	25.0	26.2	19.5	29.1	24.0	18.8	24.6	30.0	17.2	27.0	27.4	33.3	24.7	27.8	16.4
	5	22.3	23.4	17.1	20.5	22.7	25.0	22.5	20.0	25.9	23.0	20.2	20.0	28.8	18.9	21.3
	6	0.4	0.5	0	0.9	0	0	0.4	0	0	1.4	0	0	0	1.1	0
	9	3.5	2.3	7.3	1.7	4.0	6.3	3.8	0	6.9	2.7	2.4	0	1.4	3.3	8.2
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

		3.32	3.42	2.74	3.43	3.32	3.10	3.31	3.35	3.22	3.35	3.34	3.33	3.61	3.32	2.93
Sport hunting	*1*	12.1	11.7	14.6	7.7	12.0	20.3	11.4	20.0	10.3	17.6	9.7	3.3	8.2	12.2	21.3
	2	18.0	15.9	29.3	15.4	17.3	23.4	18.2	15.0	22.4	20.3	14.5	13.3	16.4	18.9	19.7
	3	24.6	24.3	24.4	30.8	17.3	21.9	24.2	30.0	27.6	24.3	23.4	40.0	24.7	20.0	24.6
	4	21.5	24.3	7.3	21.4	29.3	12.5	21.6	20.0	22.4	17.6	23.4	10.0	27.4	26.7	11.5
	5	19.9	21.5	12.2	23.1	20.0	14.1	20.3	15.0	13.8	14.9	25.8	30.0	21.9	20.0	13.1
	9	3.9	2.3	12.2	1.7	4.2	7.8	4.2	0	3.4	5.4	3.2	3.3	1.4	2.2	9.8
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		3.20	3.29	2.69	3.37	3.29	2.75	3.22	2.95	3.07	2.91	3.43	3.52	3.39	3.24	2.73
Others	*1*	7.7	9.1	0	16.7	0	0	9.1	0	0	20.0	0	0	0	16.7	0
	2	7.7	9.1	0	16.7	0	0	9.1	0	0	0	14.3	0	25.0	0	0
	3	7.7	9.1	0	0	16.7	0	9.1	0	0	0	14.3	0	0	16.7	0
	6	76.9	72.7	100.0	66.7	83.3	100.0	72.7	100.0	100.0	80.0	71.4	100.0	75.0	66.7	100.0
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		5.08	4.91	6.00	4.50	5.50	6.00	4.91	6.00	6.00	5.00	5.00	6.00	5.00	4.67	6.00

Base: Total Respondents

Q.12a In your opinion, what are the major factors causing these wild species to be endangered? -- Other factors on endangering species

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(13)	(11)	(2)	(6)	(6)	(1)	(11)	(2)	(1)	(5)	(7)	(1)	(4)	(6)	(2)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Others	*1* for the decoration purpose by the collectors	23.1	27.3	0	33.3	16.7	0	27.3	0	0	0	42.9	0	75.0	0	0
	2 lack of awareness on the balance between the nature and the human beings	15.4	9.1	50.0	16.7	16.7	0	18.2	0	0	20.0	14.3	100.0	0	0	50.0
	3 due to the mutation caused by the ecosystem destruction	15.4	18.2	0	16.7	16.7	0	0	100.0	0	40.0	0	0	0	33.3	0
	4 self-defense purpose (rhino horn is widely used in Arab countries)	7.7	9.1	0	0	16.7	0	9.1	0	100.0	0	0	0	0	16.7	0
	5 catching because they are regarded as endangered	7.7	0	50.0	0	0	100.0	9.1	0	0	0	14.3	0	0	0	50.0
	6 due to the trend of not respecting lives	7.7	9.1	0	0	16.7	0	9.1	0	0	0	14.3	0	0	16.7	0
	7 due to the population increase	7.7	9.1	0	16.7	0	0	9.1	0	0	0	14.3	0	25.0	0	0
	8 due to the introduction of industrialization and capitalism	7.7	9.1	0	16.7	0	0	9.1	0	0	20.0	0	0	0	16.7	0
	9 for health tonic purpose	7.7	9.1	0	0	16.7	0	9.1	0	0	20.0	0	0	0	16.7	0

Base: Respondents who answered “other factors”

Q.13 In your opinion, what measures are necessary to ensure the survival of these endangered species? Please number the following measures in terms of priority with "1" being the highest priority.

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 years	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Commercial trade ban	*1*	42.2	41.6	46.3	41.9	42.7	42.2	42.8	35.0	36.2	36.5	48.4	33.3	45.2	42.2	42.6
	2	14.8	13.6	22.0	12.8	16.0	17.2	14.4	20.0	10.3	17.6	15.3	23.3	13.7	14.4	13.1
	3	8.6	8.9	7.3	10.3	6.7	7.8	8.5	10.0	1.7	10.8	10.5	10.0	8.2	8.9	6.6
	4	5.1	5.1	4.9	6.0	5.3	3.1	4.7	10.0	8.6	0	6.5	3.3	8.2	5.6	1.6
	5	7.8	8.9	2.4	9.4	8.0	4.7	8.1	5.0	12.1	6.8	6.5	16.7	5.5	8.9	4.9
	6	14.8	15.0	14.6	13.7	13.3	18.8	14.8	15.0	20.7	17.6	10.5	10.0	12.3	13.3	23.0
	9	6.6	7.0	2.4	6.0	8.0	6.3	6.8	5.0	10.3	10.8	2.4	3.3	6.8	6.7	8.2
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Promoting R&D of substitutes	*1*	25.0	24.3	29.3	23.9	24.0	28.1	24.6	30.0	25.9	33.8	19.4	33.3	21.9	27.8	19.7
	2	21.9	23.4	14.6	24.8	24.0	14.1	21.6	25.0	15.5	16.2	28.2	26.7	23.3	24.4	14.8
	3	16.0	14.5	24.4	14.5	14.7	20.3	16.5	10.0	17.2	9.5	19.4	10.0	15.1	14.4	23.0
	4	10.5	12.1	2.4	14.5	12.0	1.6	11.0	5.0	12.1	10.8	9.7	16.7	12.3	12.2	1.6
	5	10.2	9.8	12.2	8.5	9.3	14.1	9.7	15.0	10.3	9.5	10.5	6.7	8.2	8.9	16.4
	6	7.8	7.9	7.3	6.8	9.3	7.8	8.1	5.0	8.6	6.8	8.1	3.3	11.0	6.7	8.2
	9	8.6	7.9	9.8	6.8	6.7	14.1	8.5	10.0	10.3	13.5	4.8	3.3	8.2	5.6	16.4
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Encourage captive breeding	*1*	6.3	6.1	7.3	2.6	8.0	10.9	6.4	5.0	6.9	5.4	6.5	0	5.5	3.3	14.8
	2	10.5	10.7	9.8	11.1	10.7	9.4	9.7	20.0	17.2	12.2	6.5	6.7	6.8	14.4	9.8
	3	10.2	10.7	7.3	11.1	10.7	7.8	11.0	0	10.3	8.1	11.3	16.7	12.3	7.8	8.2
	4	14.1	11.2	29.3	9.4	13.3	23.4	14.4	10.0	8.6	16.2	15.3	10.0	8.2	17.8	18.0
	5	23.4	22.9	26.8	23.9	26.7	18.8	24.6	10.0	20.7	25.7	23.4	16.7	28.8	23.3	21.3
	6	25.0	28.0	9.8	33.3	21.3	14.1	23.3	45.0	22.4	18.9	29.8	43.3	27.4	25.6	11.5
	9	10.5	10.3	9.8	8.5	9.3	15.6	10.6	10.0	13.8	13.5	7.3	6.7	11.0	7.8	16.4
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Strengthen enforcement of existing law & regulations	*1*	5.1	5.6	2.4	6.8	2.7	4.7	5.5	0	5.2	5.4	4.8	10.0	4.1	3.3	6.6
	2	20.3	22.0	12.2	21.4	21.3	17.2	21.6	5.0	24.1	20.3	18.5	16.7	26.0	15.6	21.3
	3	20.3	19.6	24.4	25.6	16.0	15.6	18.6	40.0	19.0	17.6	22.6	30.0	21.9	18.9	16.4
	4	18.0	18.2	17.1	20.5	16.0	15.6	16.9	30.0	19.0	17.6	17.7	30.0	12.3	18.9	16.4
	5	16.0	15.0	22.0	10.3	20.0	21.9	16.5	10.0	13.8	12.2	19.4	3.3	15.1	22.2	14.8
	6	10.9	11.2	9.8	8.5	16.0	9.4	11.4	5.0	10.3	13.5	9.7	3.3	12.3	14.4	8.2
	9	9.4	8.4	12.2	6.8	8.0	15.6	9.3	10.0	8.6	13.5	7.3	6.7	8.2	6.7	16.4
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Increase population in the wild	*1*	12.1	11.2	14.6	14.5	6.7	14.1	11.9	15.0	12.1	8.1	14.5	16.7	11.0	12.2	11.5
	2	12.9	11.7	19.5	11.1	10.7	18.8	12.7	15.0	13.8	8.1	15.3	10.0	11.0	14.4	14.8
	3	21.1	22.4	14.6	17.1	29.3	18.8	21.2	20.0	20.7	27.0	17.7	13.3	17.8	27.8	19.7
	4	18.8	18.2	22.0	19.7	17.3	18.8	19.5	10.0	15.5	23.0	17.7	13.3	24.7	15.6	19.7
	5	14.8	15.9	9.8	18.8	16.0	6.3	14.4	20.0	15.5	13.5	15.3	33.3	16.4	10.0	8.2
	6	10.9	11.7	7.3	12.0	12.0	7.8	10.6	15.0	12.1	6.8	12.9	10.0	11.0	13.3	8.2
	9	9.4	8.9	12.2	6.8	8.0	15.6	9.7	5.0	10.3	13.5	6.5	3.3	8.2	6.7	18.0
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Campaign to reduce demand	*1*	5.9	7.0	0	5.1	12.0	0	5.5	10.0	10.3	2.7	5.6	3.3	8.2	6.7	3.3
	2	11.7	11.2	12.2	12.8	10.7	10.9	11.9	10.0	10.3	13.5	11.3	13.3	12.3	11.1	11.5
	3	14.8	15.9	9.8	15.4	14.7	14.1	14.8	15.0	20.7	13.5	12.9	16.7	16.4	15.6	9.8
	4	22.7	24.8	12.2	21.4	26.7	20.3	22.5	25.0	24.1	17.6	25.0	20.0	23.3	22.2	24.6
	5	16.4	16.8	14.6	20.5	10.7	15.6	15.3	30.0	13.8	17.6	16.9	16.7	15.1	18.9	14.8
	6	19.1	15.4	39.0	17.1	18.7	23.4	20.3	5.0	12.1	21.6	21.0	23.3	15.1	18.9	21.3
	9	9.4	8.9	12.2	7.7	6.7	15.6	9.7	5.0	8.6	13.5	7.3	6.7	9.6	6.7	14.8
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Base : Total Respondents

Q.14 Are you aware that domestic trade in tiger bone and rhinoceros horn has been banned as of 1994 under CITES-related laws?

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Ban of Commercial Domestic trade	Know	88.7	87.4	95.1	84.6	89.3	95.3	88.6	90.0	91.4	90.5	86.3	60.0	90.4	92.2	95.1
	Don't know	10.9	12.1	4.9	14.5	10.7	4.7	11.0	10.0	8.6	8.1	13.7	40.0	8.2	7.8	4.9
	No response	0.4	0.5	0	0.9	0	0	0.4	0	0	1.4	0	0	1.4	0	0

Base: Total respondents

Q.15 Are you aware that the trade in musk, pangolin scale, and bear gallbladder is regulated through permits under CITES-related laws?

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Permitting International trade	Know	67.6	63.6	87.8	59.0	66.7	84.4	69.9	40.0	72.4	67.6	65.3	33.3	61.6	72.2	83.6
	Don't know	32.0	36.0	12.2	40.2	33.3	15.6	29.7	60.6	27.6	31.1	34.7	66.7	37.0	27.8	16.4
	No response	0.4	0.5	0	0.9	0	0	0.4	0	0	1.4	0	0	1.4	0	0

Base: Total respondents

Q.16 What do you think of the current level of regulation of the domestic trade in medicinal ingredients such as tiger bone, rhinoceros horn, musk, pangolin scale, and bear gallbladder?

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
regulation level of domestic commercial trade	(+1) Too lax	3.9	3.3	7.3	2.6	2.7	7.8	3.8	5.0	1.7	4.1	4.8	0	4.1	2.2	8.2
	(+2) Lax	29.7	33.2	12.2	36.8	32.0	14.1	29.7	30.0	34.5	21.6	32.3	46.7	31.5	28.9	19.7
	(+3) Appropriate	29.7	29.9	29.3	26.5	33.3	31.3	30.5	20.0	24.1	36.5	28.2	33.3	28.8	32.2	26.2
	(+4) Strict	28.9	26.6	41.5	24.8	28.0	37.5	28.8	30.0	36.2	27.0	26.6	13.3	27.4	31.1	36.1
	(+5) Too strict	3.5	1.9	9.8	1.7	1.3	9.4	3.8	0	3.4	2.7	4.0	0	2.7	1.1	9.8
	No response	4.3	5.1	0	7.7	2.7	0	3.4	15.0	0	8.1	4.0	6.7	5.5	4.4	0
Positive (+4/+5)		33.9	30.0	51.2	28.7	30.1	46.9	33.8	35.3	39.7	32.4	31.9	14.3	31.9	33.7	45.9
Negative (+1/+2)		66.1	70.0	48.8	71.3	69.9	53.1	66.2	64.7	60.3	67.6	68.1	85.7	68.1	66.3	54.1
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean		2.98	2.90	3.34	2.85	2.93	3.27	2.99	2.88	3.05	3.03	2.92	2.64	2.93	3.00	3.20

Base: Total respondents

Q.17 Have you applied for CITES permits to import any of these medicinal materials?

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
CITES permit experience	Yes	0.8	0.5	0	0	0	3.1	0.8	0	3.4	0	0	0	0	0	3.3
	No	98.4	99.1	97.6	99.1	100.0	95.3	98.3	100.0	96.6	98.6	99.2	100.0	98.6	100.0	95.1
	No response	0.8	0.5	2.4	0.9	0	1.6	0.8	0	0	1.4	0.8	0	1.4	0	1.6

Base: Total respondents

Q.17a Based on your experience in applying for CITES permits, what do you think of the procedures?

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(2)	(1)	(0)	(0)	(0)	(2)	(2)	(0)	(2)	(0)	(0)	(0)	(0)	(0)	(2)
		100.0	100.0	0	0	0	100.0	100.0	0	100.0	0	0	0	0	0	100.0
The degree of difficulty in applying for CITES permit		100.0	100.0	0	0	0	100.0	100.0	0	100.0	0	0	0	0	0	100.0
		100.0	100.0	0	0	0	100.0	100.0	0	100.0	0	0	0	0	0	100.0
Mean		1.0	1.0	0	0	0	1.0	1.0	0	1.0	0	0	0	0	0	1.0

Base: Respondents who previously applied for CITES permit.

Q. 18 How did the domestic trade ban/restrictions on the following medicinal ingredients affect your ability to treat patients?

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Tiger bone	(+1) Not at all	60.2	61.2	53.7	60.7	68.0	50.0	58.9	75.0	69.0	52.7	60.5	60.0	61.6	61.1	55.7
	(+2) Moderately	21.5	21.5	22.0	21.4	14.7	29.7	22.0	15.0	15.5	23.0	23.4	10.0	27.4	18.9	24.6
	(+3) Greatly	4.3	2.8	12.2	1.7	2.7	10.9	4.7	0	3.4	5.4	4.0	3.3	0	4.4	9.8
	No response	14.1	14.5	12.2	16.2	14.7	9.4	14.4	10.0	12.1	18.9	12.1	26.7	11.0	15.6	9.8
Neutral (+3)		5.0	3.3	13.9	2.0	3.1	12.1	5.4	0	3.9	6.7	4.6	4.5	0	5.3	10.9
Negative (+1/+2)		95.0	96.7	86.1	98.0	96.9	87.9	94.6	100.0	96.1	93.3	95.4	95.5	100.0	94.7	89.1
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean		1.35	1.32	1.53	1.30	1.23	1.57	1.37	1.17	1.25	1.42	1.36	1.23	1.31	1.33	1.49
Rhino horn	(+1) Not at all	33.6	36.4	19.5	39.3	33.3	23.4	33.1	40.0	34.5	32.4	33.9	46.7	41.1	28.9	24.6
	(+2) Moderately	35.9	35.0	41.5	31.6	38.7	40.6	35.2	45.0	34.5	39.2	34.7	13.3	35.6	41.1	39.3
	(+3) Greatly	18.8	16.4	29.3	16.2	16.0	26.6	19.5	10.0	22.4	13.5	20.2	13.3	17.8	16.7	26.2
	No response	11.7	12.1	9.8	12.8	12.0	9.4	12.3	5.0	8.6	14.9	11.3	26.7	5.5	13.3	9.8
Neutral (+3)		21.2	18.6	32.4	18.6	18.2	29.3	22.2	10.5	24.5	15.9	22.7	18.2	18.8	19.2	29.1
Negative (+1/+2)		78.8	81.4	67.6	81.4	81.8	70.7	77.8	89.5	75.5	84.1	77.3	81.8	81.2	80.8	70.9
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean		1.83	1.77	2.11	1.74	1.80	2.03	1.85	1.68	1.87	1.78	1.85	1.55	1.75	1.86	2.02
Pangolin	(+1) Not at all	29.7	33.2	12.2	34.2	36.0	14.1	28.4	45.0	37.9	24.3	29.0	40.0	34.2	32.2	14.8
	(+2) Moderately	50.0	49.1	53.7	45.3	52.0	56.3	50.8	40.0	44.8	54.1	50.0	33.3	54.8	46.7	57.4
	(+3) Greatly	14.8	11.7	31.7	12.0	9.3	26.6	15.3	10.0	12.1	14.9	16.1	6.7	6.8	17.8	24.6
	No response	5.5	6.1	2.4	8.5	2.7	3.1	5.5	5.0	5.2	6.8	4.8	20.0	4.1	3.3	3.3
Neutral (+3)		15.7	12.4	32.5	13.1	9.6	27.4	16.1	10.5	12.7	15.9	16.9	8.3	7.1	18.4	25.4
Negative (+1/+2)		84.3	87.6	67.5	86.9	90.4	72.6	83.9	89.5	87.3	84.1	83.1	91.7	92.9	81.6	74.6
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean		1.84	1.77	2.20	1.76	1.73	2.13	1.86	1.63	1.73	1.90	1.86	1.58	1.71	1.85	2.10
Musk	(+1) Not at all	32.4	32.7	31.7	36.8	32.0	25.0	31.8	40.0	32.8	29.7	33.9	40.0	37.0	28.9	27.9
	(+2) Moderately	35.2	36.0	31.7	34.2	34.7	37.5	34.7	40.0	36.2	36.5	33.9	26.7	37.0	37.8	32.8
	(+3) Greatly	22.7	22.0	24.4	17.1	25.3	29.7	23.7	10.0	27.6	18.9	22.6	13.3	20.5	22.2	31.1
	No response	9.8	9.3	12.2	12.0	8.0	7.8	9.7	10.0	3.4	14.9	9.7	20.0	5.5	11.1	8.2
Neutral (+3)		25.1	24.2	27.8	19.4	27.5	32.2	26.3	11.1	28.6	22.2	25.0	16.7	21.7	25.0	33.9
Negative (+1/+2)		74.9	75.8	72.2	80.6	72.5	67.8	73.7	88.9	71.4	77.8	75.0	83.3	78.3	75.0	66.1
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean		1.89	1.88	1.92	1.78	1.93	2.05	1.91	1.67	1.95	1.87	1.88	1.67	1.83	1.93	2.04
Bear gallbladder	(+1) Not at all	46.1	45.8	46.3	48.7	44.0	43.8	47.0	35.0	44.8	44.6	47.6	40.0	47.9	47.8	44.3
	(+2) Moderately	32.0	33.6	24.4	28.2	36.0	34.4	30.5	50.0	34.5	37.8	27.4	30.0	35.6	28.9	32.8
	(+3) Greatly	10.5	9.3	17.1	8.5	9.3	15.6	11.0	5.0	13.8	4.1	12.9	3.3	9.6	10.0	16.4
	No response	11.3	11.2	12.2	14.5	10.7	6.3	11.4	10.0	6.9	13.5	12.1	26.7	6.8	13.3	6.6
Neutral (+3)		11.9	10.5	19.4	10.0	10.4	16.7	12.4	5.6	14.8	4.7	14.7	4.5	10.3	11.5	17.5
Negative (+1/+2)		88.1	89.5	80.6	90.0	89.6	83.3	87.6	94.4	85.2	95.3	85.3	95.5	89.7	88.5	82.5
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean		1.60	1.59	1.67	1.53	1.61	1.70	1.59	1.67	1.67	1.53	1.61	1.50	1.59	1.56	1.70

Base: Total respondents

Q.19 Medicinal ingredients such as tiger bone, rhinoceros horn, musk, pangolin scale, and bear gallbladder are harvested from endangered species in the wild. Do you intend to continue using these materials?

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(256)	(214)	(41)	(117)	(75)	(64)	(236)	(20)	(58)	(74)	(124)	(30)	(73)	(90)	(61)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Intention to use threatened species	Will use	28.9	26.2	41.5	29.1	18.7	40.6	30.1	15.0	34.5	25.7	28.2	33.3	23.3	24.4	41.0
	Will not use	69.1	72.0	56.1	69.2	78.7	57.8	67.8	85.0	65.5	70.3	70.2	66.7	74.0	73.3	57.4
	No response	2.0	1.9	2.4	1.7	2.7	1.6	2.1	0	0	4.1	1.6	0	2.7	2.2	1.6

Base: Total respondents

Q. 19-1 What are the reasons for your intention to continue to use medicinal ingredients such as tiger bone, rhinoceros horn, musk, pangolin, and bear gallbladder? (* You may choose more than one response)

		Total	Occupation		Age			Gender		Working place			Working experience			
			Oriental Medicine	Oriental Pharmacists	30s	40s	Over 50s	Male	Female	Seoul	Other Metropolitan	Other counties & cities	Less than 5 yrs	6-10 yrs	11-20 yrs	More than 20 yrs
Base for %		(74)	(56)	(17)	(34)	(14)	(26)	(71)	(3)	(20)	(19)	(35)	(10)	(17)	(22)	(25)
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Multi-responses	No suitable alternatives	58.1	62.5	47.1	58.8	85.7	42.3	57.7	66.7	55.0	47.4	65.7	70.0	58.8	63.6	48.0
	Excellent efficacy	52.7	55.4	41.2	58.8	35.7	53.8	52.1	66.7	55.0	52.6	51.4	80.0	52.9	40.9	52.0
	To use up existing stock	10.8	8.9	17.6	8.8	14.3	11.5	11.3	0	5.0	5.3	17.1	0	5.9	22.7	8.0
	Customers insisting on those materials	2.7	1.8	5.9	0	0	7.7	2.8	0	5.0	0	2.9	0	0	0	8.0
	Out of tradition in place for generations	1.4	1.8	0	0	7.1	0	1.4	0	0	5.3	0	0	0	0	4.0
	Necessary for the prescription	1.4	1.8	0	2.9	0	0	1.4	0	0	0	2.9	0	5.9	0	0
	Others	1.4	1.8	0	0	0	3.8	1.4	0	5.0	0	0	0	0	0	4.0

Base: Respondents who have intention to use the threatened species