

# GLOBAL INITIATIVE

AGAINST TRANSNATIONAL  
ORGANIZED CRIME

# ONLINE MARKETS FOR PANGOLIN-DERIVED PRODUCTS

Dynamics of e-commerce platforms

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## Market Monitoring and Friction Unit

The Market Monitoring and Friction Unit (MMFU) is a team within the Global Initiative Against Transnational Organized Crime (GI-TOC) dedicated to monitoring online marketing of endangered wildlife species and working towards innovative, effective strategies for disrupting them. The unit collaborates with civil society organizations and mandated authorities to shut down online illicit wildlife markets.

Websites on the open web – sites that people can access and use every day – host some of the biggest online markets for endangered species.<sup>1</sup> Evidence of wildlife crime is widespread across the internet and private platforms, and law enforcement agencies are either unwilling or unable to mount an adequate response.<sup>2</sup>

This mirrors a broader challenge in combating cyber-enabled crime, namely that criminals are on the web, but the police are not. Reasons for this include responses to cybercrime being under-resourced, a lack of explicit mandates to address it and the absence of investigatory authorities. This situation manifests unequally around the world. While rich countries have the largest internet-using populations, they also have the most resources to combat on-line harms. The greatest challenges are found in developing countries with the least resources for regulating cyberspace or implementing strategies to combat cybercrime.

Within this broader crisis, the online trade in endangered species is easily overlooked, leaving a gap in the global response that allows wildlife traders to openly seek customers online, market goods, conduct transactions and stimulate demand. This contributes to the wider problem of the illicit wildlife trade, which can lead to extinction of species and heightened risk of outbreaks of zoonotic diseases; it also encourages corruption while enriching highly organized criminal networks.

The MMFU's investigation into the illicit online trade in endangered species grew from the recognition that innovative responses were needed to combat this type of crime. The unit's aim is to make the open web a space where there are fit-for-purpose laws protecting us – and endangered species – and that they are respected in letter and spirit.

With trend reports such as this one, the MMFU intends to share its knowledge with the various communities responding to the harms caused by illicit online wildlife trade. It is hoped that such reports will help to scale the lessons learnt and multiply the number of effective interventions to rein in illicit wildlife markets.

## Summary

The research described in this report attempts to shed a new light on a known major illicit wildlife-trade issue, namely the use of pangolin parts and scales in the manufacturing of a number of items, especially traditional Chinese medicine remedies. Pangolins are known to be among the world's most trafficked animals, due to the use of their meat and scales in Africa and Asia. Several species of pangolins have been driven to the brink of extinction due to a massive illicit trade that not only connects pangolin range states in Asia and Africa but also Europe and the United States. This report provides large-scale evidence supporting the claim that the internet plays a major role in the trade of pangolin-derived products across various jurisdictions.

Based on machine-learning-enabled monitoring of online platforms advertising pangolin-derived items in English and Chinese, the MMFU was able to identify major trade compliance loopholes. These allow a vibrant trade of pangolin-derived products to take place online, on so-called classified platforms, which is facilitated by numerous other actors. This research identifies the drugs that are most often offered for sale online and therefore likely to contribute the most to the trade in pangolin scales. Although national and international safeguards exist, this research also shows that consumers could often be in a position where they would be unable to make informed decisions when purchasing pangolin-derived products, may potentially be led by 'agent' websites to consume remedies containing pangolin scales, and/or could easily import these remedies from abroad. Such trade, where it does take place, would be in contravention of agreements under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). It also shows that English-language websites much more frequently attempt to obfuscate the presence of pangolin scales listed as ingredients than their Chinese-language equivalent.

A total of 924 online advertisements were identified over a six-month period (April 2021–October 2021), with almost all of them being on classified sites. The majority of advertisements were posted on Chinese-speaking websites, many of which offer to ship their products internationally. As a result, items such as remedies or incense containing pangolin scales may well be imported into European and North American countries, and sold to local consumers.

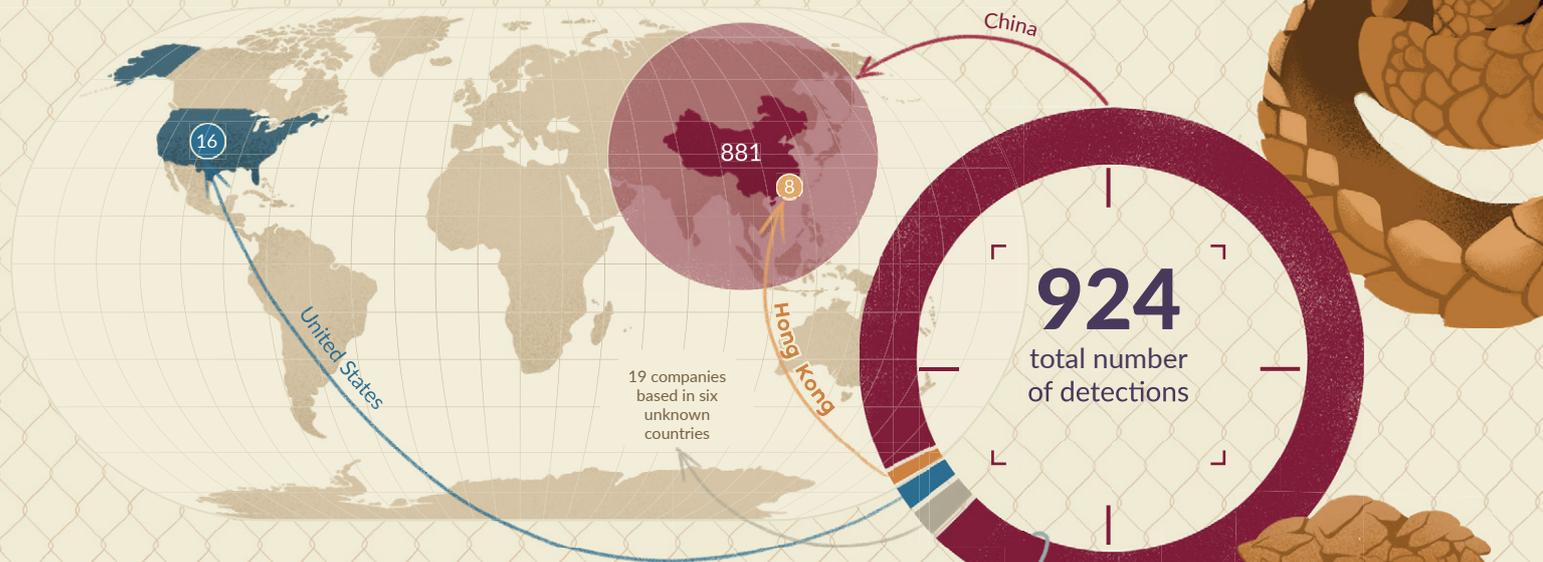
This report provides actionable recommendations for national authorities in China and elsewhere in order to curb the online trade of pangolin-derived items. The MMFU will continue to monitor pangolin-derived products markets on the indexed web and social media sites to ensure sustained awareness about this problem and its effects, and engage with the platforms identified to request action to curb the use of their service in cases where evidence of activity that appears contrary to national and international law exists. More information about the online trade of endangered species will follow as the Unit's investigations evolve.



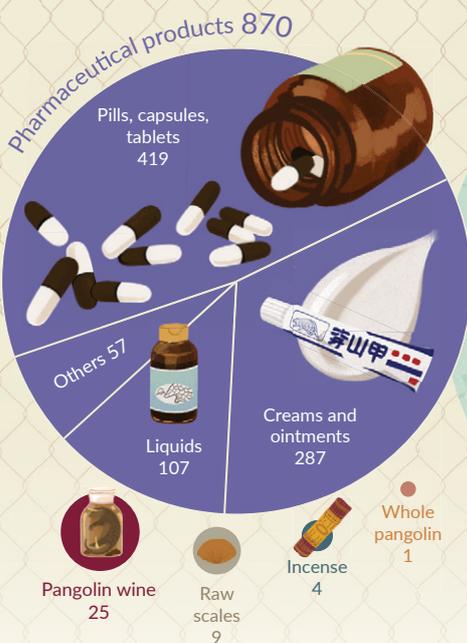
Pangolin scales on sale in a traditional Chinese medicine shop in China.  
© Globalstory

# PANGOLIN TRAFFICKING

Despite pangolins benefiting from the highest protection levels in China and internationally, pangolins and traditional Chinese medicine drugs listing pangolin products are still widely advertised online, without clear indications about the origin of the scales. This practice may be fueling demand for illegally trafficked pangolin scales.



## Breakdown by product



## Breakdown by language

Simplified Chinese: 873  
English: 51

**ONLY 9% OF THE CHINESE-LANGUAGE DETECTIONS DISPLAYED THE CHINA NATIONAL WILDLIFE MARK (CNWM).**

CNWM is supposed to vet the legal and sustainable sourcing of wildlife products.



**64%** were 'agent' websites

which play an important role amplifying the marketing of these products, without safeguards.



## KEY TAKEAWAYS



Despite strict and strong laws, the online market for pangolin-derived traditional Chinese medicine drugs is largely not compliant with national and international laws and regulations.



Without the CNWM logo and other information, customers are not able to make informed decisions about the impact of their consumption of pangolin-derivatives on the continued existence of the species. They are being misled by omission.



'Agent' websites act as important intermediaries in the trade chain, but are not bound by the same rules as manufacturers or sellers of pangolin-derived products.



Online sites may also be contributing to the circulation of pangolin-derived items in non-Chinese markets.



More pressure from law-enforcement agencies is needed to encourage e-commerce platforms to self-police and deter the illicit trade in pangolin-derived items.



## INTRODUCTION

**B**etween December 2020 and September 2021, a team of researchers at the MMFU in collaboration with researchers at the University of Oxford and the Zoological Society of London conducted a data-driven research project to determine the retail market of what is likely to be the world's most trafficked wild mammal – the pangolin. Using our machine-learning-based tool called Cascade, nearly a thousand detections of retail websites ostensibly offering pangolin-derived traditional Chinese medicine (TCM) drugs, wine and incense were found, in addition to adverts for raw and processed scales and body parts. The research was conducted in Mandarin and English, which allowed the research team to examine the domestic Chinese-speaking market,<sup>3</sup> while also considering advertisements targeting a global customer base.

Pangolin scales have long been used as ingredients in traditional medicines in Africa and Asia, including in TCM. The commercial, international trade in wild-caught pangolins and pangolin parts has been illegal under CITES since 2017, but despite this, multi-tonne seizures of illegal shipments of pangolin scales are made regularly. Exploitation of pangolins is contributing to the high extinction risk for the species. Although national and international legislative protection measures have steadily improved over the last few decades, enforcement of these laws remains inadequate, ineffective and under-resourced, enabling the continuation of the trade.<sup>4</sup>

▲ Pangolin wine sold among other wildlife-derived products in a shop in Asia. Pangolins are likely to be the world's most trafficked mammal.

© Cambodgemag

This research was undertaken to better understand crucial aspects of the market for pangolin parts and derivatives, so that efficient strategies for preventing illegal trade and avoiding over-exploitation of wild pangolin populations can be devised. The objective of the project was first to assess the online markets for medicinal products containing pangolin scale, as this is believed to be the main product in trade. However, the extent of the trade in other emerging uses of pangolin and in pangolin-derived products (such as in incense) was also evaluated.

The study also aimed to assess whether online vendors are abiding by laws and regulations that

are intended to keep pharmaceutical supply chains within China's market free of illegally sourced pangolin derivatives, as well as evaluate the risk that online sites are enabling sales outside of China, which would be in violation of international (especially of CITES) and national laws.

The report begins with a discussion of the harms associated with the trade in pangolin-derived products, the dynamics of pangolin trafficking and the legal frameworks pertaining to retail markets in China. A summary of the data findings is provided on page 4, followed by an in-depth analysis of the results.

## Methodology

This research report results from an innovative research methodology centred on the use of our machine-learning-driven automated webscraper called Cascade, which was designed and is operated by our partner institution the Centre for the Analysis of Social Media.

To carry out this study, we composed a methodology using Cascade that was designed to conduct a search targeted at finding TCM products containing pangolin-derived ingredients. The methodology was to search the internet in a manner that was agnostic to location, and would therefore find the broadest possible range of sites hosting this material (as opposed to doing a platform-specific search). We drafted a list of keywords in English and simplified Chinese related to items known to contain pangolin parts (TCM medicine, wine, incense and raw or processed scales). To this list were added the names of 105 drugs known to contain pangolin scale (according to various TCM encyclopedias) and were later confirmed to have pangolin scale listed as an ingredient on their packaging.

Cascade performed several rounds of detection (three in English and two in Chinese) between November 2020 and July 2021. Some 6 105 links ('detections') were collected by Cascade to then be analyzed by GI-TOC researchers, following a two-step process. Detections were first assessed for relevance only ('fast passed'), which allowed researchers to clean irrelevant 'by-catch' data. Out of these initial links, 924 were considered relevant for this study (see 'Data at a glance' below); these were subsequently coded and analyzed by the GI-TOC.

The research team selected a series of coding criteria following an initial study of China's regulation mechanisms for wildlife protection and the TCM market. These coding criteria (e.g., prices, presence of pangolin-derived ingredients, and manufacturers) were selected to inform two main research objectives: first, strengthening our understanding of the pangolin-based TCM market in China and elsewhere, and second, identifying specific trade practices suggesting potential attempts at evading domestic and international laws.

## Cascade

Cascade achieves a large-scale collection of candidate 'detections' through an iterative process of generating and expanding search queries, searching the web and scraping the results. Cascade then uses a number of machine-learning-based and keyword-based search classifiers to filter irrelevant content and produce a set of candidate detections deemed most likely to contain a target product or animal for sale. The broad range of search queries used by Cascade are generated using a variety of natural-language information extraction techniques in combination with input from domain experts and manual categorization (e.g. animal names, product names and sale words). Cascade is able to perform broad text- and image-based searches in a variety of languages, which makes it a prime tool for detecting online attempts at selling previously identified items containing ingredients derived from endangered species or other specific components. Cascade has already been used by the GI-TOC to conduct studies on the trading of live animals and birds on e-commerce platforms in a number of geographical contexts.<sup>5</sup>



Traditional Chinese medicine capsules using pangolin scales manufactured in China.

© Cambodgemag

## Data at a glance

The data collected from this study consists of a total of 924 positive detections, 873 of which used simplified Chinese as their main language. A further 51 detections were in English, and targeted consumers outside of China.

Across the data set, the majority (881) of companies hosting these sites were based in mainland China; eight were based in Hong Kong; and 16 in the US. A further 19 companies were found in six countries across the world or had unknown locations.

The products marketed in the data are primarily medicinal products (870 detections), distantly followed by pangolin wine (25 detections), raw scales (nine detections) and incense (four detections). One website selling whole pangolin was also identified.

Among medicinal products, the most commonly encountered forms were pills, capsules and tablets (419 detections), creams and ointments (287 detections), liquids (107 detections), powders (37 detections) and plasters (seven detections).

The majority of the marketing for these products was aimed at Chinese consumers, in the context of the country's regulated market for pangolin. However, very few of these advertisements complied with the full range of Chinese regulations – only 52 (9%) of

the Chinese-language detections displayed the China National Wildlife Mark (CNWM), which is supposed to vet the legal and sustainable sourcing of wildlife products.

On the 31 sites aimed at consumers outside of China, where there are strong legal prohibitions on the trade of pangolin-derived products and all sales should expose market actors to legal actions, 24 detections, out of 55, obscured the presence of pangolin in the ingredients.

More than half of the detections in Chinese language (64%, or 572 detections) were 'agent' websites, an additional layer of intermediaries in the supply chain. Agent websites do not directly market drugs containing pangolin-derived ingredients but rather offer a wide range of services regarding TCM medicine and, in most cases, provide direct links to active online advertisements. As agent websites do not themselves sell drugs or other items containing pangolin, it is not clear whether they are covered by the same rules as other TCM e-commerce platforms, a problematic loophole in Chinese regulations.

Lastly, 7% of advertisements (62) were on websites that offer to ship their products internationally and 2% (14) on Chinese websites that ship to Hong Kong (in addition to within the mainland), which raises the possibility of CITES violations.



# HARMS ASSOCIATED WITH THE TRADE IN PANGOLIN SCALES

## Current conservation status of pangolin species

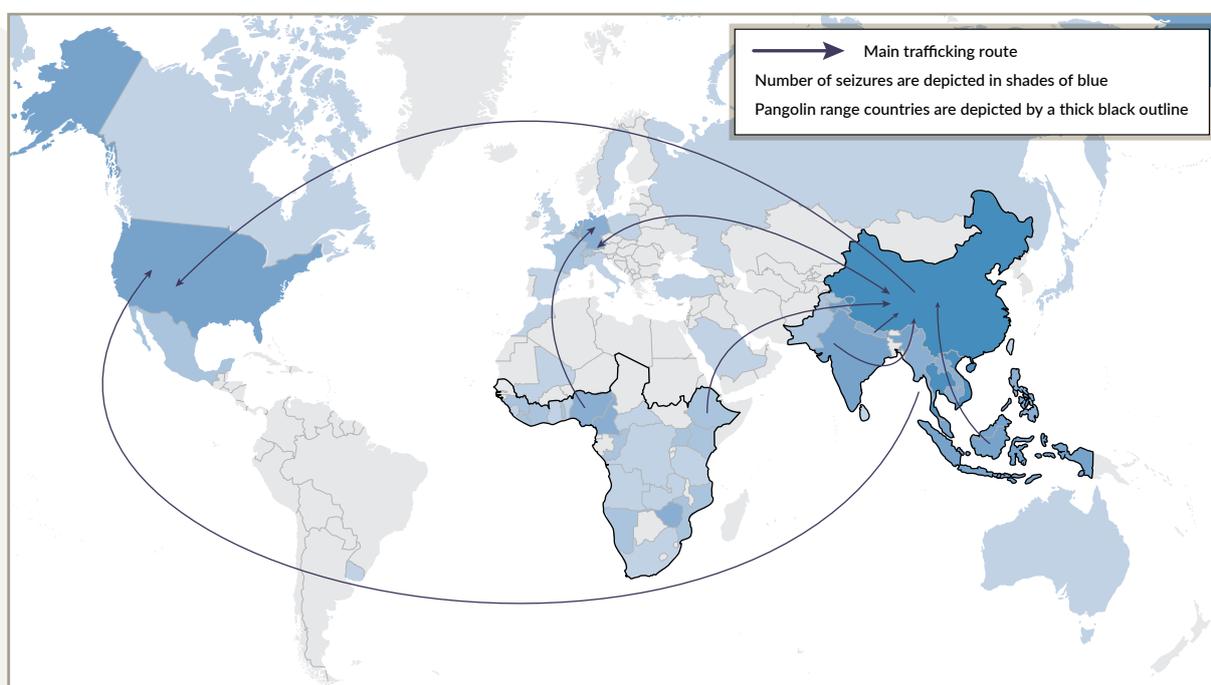
All species of pangolin are listed as threatened on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species, which is the most widely recognized global source for extinction risk. The eight recognized species are distributed across sub-Saharan Africa and Asia (South, East and South East). Figure 1 summarizes key information about pangolins species, their conservations status and their range.

According to the IUCN Red List, all pangolin species are threatened due to over-exploitation in Asia and Africa, with several consumption patterns driving the demand for pangolin parts or for live specimens.<sup>6</sup> Pangolins are hunted and poached for their meat and scales but also for other body parts, which are used in traditional medicines in Africa and Asia (see below).<sup>7</sup> Certain pangolin species are thought to be locally extinct – for instance, recent research suggests that the giant pangolin (*Smutsia gigantea*) population in northern Benin has disappeared.<sup>8</sup> Sunda and Chinese pangolins are understood to be commercially extinct in part of their ranges in South East Asia, meaning population numbers are so low that it is no longer profitable to harvest.<sup>9</sup>

▲ Officers show pangolin scales seized in Riau Province, Indonesia, in 2020. Pangolin scales are believed to have certain medicinal properties and are used in traditional medicine systems. © Afrianto Silalahi/ Future Publishing via Getty Images

SPECIES NAME	SCIENTIFIC NAME	IUCN RED LIST CATEGORY	DISTRIBUTION
Indian pangolin	<i>Manis crassicaudata</i>	Endangered	South Asia
Chinese pangolin	<i>Manis pentadactyla</i>	Critically endangered	East and South East Asia
Sunda pangolin	<i>Manis javanica</i>	Critically endangered	South East Asia
Philippine pangolin	<i>Manis culionensis</i>	Critically endangered	Philippines
White-bellied pangolin	<i>Phataginus tricuspis</i>	Endangered	East, central and West Africa
Black-bellied pangolin	<i>Phataginus tetradactyla</i>	Vulnerable	West and central Africa
Giant pangolin	<i>Smutsia gigantea</i>	Endangered	East, central and West Africa
Temminck's pangolin	<i>Smutsia temminckii</i>	Vulnerable	East and southern Africa

**FIGURE 1** Distribution and conservation status of pangolin species.



**FIGURE 2** Main trafficking routes linking range states and consumption markets.

NOTE: The figure does not present the total relative volume of scales.

## Drivers of demand

Although pangolins are poached for different reasons, depending on the local context and prevailing consumption patterns, evidence indicates that the majority of international trafficking in pangolins in the past five years has involved African pangolins. African pangolins are poached for their meat and scales, the latter being trafficked intercontinentally from a range of African countries to Asia – primarily to China and Vietnam.<sup>10</sup> An important share of the demand that drives this trade comes from the use of pangolin scales in traditional medicine, particularly TCM, although pangolin scale is used in several other African and Asian traditional medicine systems (for instance, in India, Pakistan and Nigeria).<sup>11</sup>

Pangolin scales are made of keratin (the same substance that makes up human hair and nails) and are believed by users of TCM to have certain medicinal properties, such as promoting blood circulation, stimulating lactation, reducing swelling and expelling pus.<sup>12</sup>

Scales are sold either raw or processed (e.g. fried) in TCM markets, pharmacies or retail shops, or are used as ingredients in manufactured TCM drugs and remedies. Although, in recent years, Chinese authorities have tried to decrease the number of TCM drugs formulas that appear in the official *Pharmacopoeia of the People's Republic of China*, the country's official compendium of drugs, research has shown that beyond the eight drug formulas that still contain pangolin scales in China, many drugs available online list pangolin scales as ingredients.<sup>13</sup> Using automated searches and human analysis, this study found at least 105 drugs claiming to contain pangolin scales as ingredients currently being sold online.

An important point is that our research has identified

products that are marketed by websites: the products are either directly marketed as containing pangolin scales or the products pictured on such advertisements identify pangolin as a product. We cannot therefore say if any particular products does contain pangolin product or whether such a product was, in fact, bought and sold. This research is aimed at developing an understanding of the digital market for products that claim to contain pangolin products or that ordinarily contain pangolin products, and to assess whether that marketing complies with applicable laws and regulations. It also examines some attempts to circumvent legal requirements for the marketing and sale of such items.

While the international trade in pangolin parts and live animals has been gradually restricted by CITES,<sup>14</sup> the legal status of the pangolin-scale trade within China for the production of TCM drugs is much more complex. Within China, there has been a legal market for scales for thousands of years, which has recently become more highly regulated and contested. This shift reflects a long-standing struggle between conservation efforts and increasingly stringent health policies and regulations, on one side, and government policies aiming at upholding Chinese traditions and cultures, on the other.

Pangolins are also consumed as food in most places where they are endemic; the meat is considered to be a delicacy in some regions, which is another driver of the trade. However, if seizure data accurately reflects the dynamics of the trade, then over the last decade, smuggling networks have been more heavily involved in the trafficking of pangolin scales (rather than live animals, which may be destined for food). While scales constituted less than 10% of all seizures in 2007, they made up as much as 97% of seized pangolin parts in 2018.<sup>15</sup>

## CITES and increasing restrictions on international trade

Restrictions on the international trade in pangolins and their parts and derivatives date back to 1975, when the Sunda, Indian and Chinese pangolins were added to CITES Appendix II, and the Temminck's pangolin was directly added to Appendix I.<sup>16</sup> In

1994, all pangolin species were listed in Appendix II, and later transferred to Appendix I at the 17<sup>th</sup> meeting of the Conference of the Parties to CITES in Johannesburg, South Africa, in 2016. The lack of sustainability of the pangolin trade was underlined by

CITES as early as 1988, when three Asian pangolin species recognized at the time were included in the Review of Significant Trade Processes (RST). All other remaining species were added to the RST in 2013. Recommendations were made within the preliminary phase of the RST, as well as Phases I (1992) and IV (1999), including increasing vigilance among Parties trading in pangolins.

Although these were considered by the Parties and the CITES Secretariat to have been implemented, concerns regarding the sustainability of exploitation of pangolin populations have persisted ever since.<sup>17</sup> Following the inclusion of all eight pangolin species in Appendix I, which entered into force in January 2017, the commercial international trade in wild pangolins and their parts (including pangolin scales in TCM drugs) has been prohibited.<sup>18</sup> Domestic trade is largely prohibited in most range states, with exceptions including China, Gabon and Sierra Leone. China is discussed in more detail below.

### China's complex domestic legal framework

Although all pangolins receive the highest level of protection at the international level, in China there is a legal market in which the trade in pangolins and pangolin derivatives is allowed to operate under certain conditions.<sup>21</sup> Manufacturers seeking to purchase and use pangolin parts need to obtain several specific authorizations from various government agencies, which makes the process complex to implement. This complexity in the regulation process – combined with a lack of transparency – creates loopholes, as seen in a number of recent scandals involving the laundering of imported African pangolins via fake breeding centres and senior executives of pharmaceutical companies being jailed for misrepresenting their pangolin-scale supplies.<sup>22</sup>

China's 1988 Wildlife Protection Law (updated in 2009, 2016 and 2018) clearly states that the 'sale, purchase and utilization of wildlife under special state protection or the products thereof shall be prohibited',<sup>23</sup> albeit with an exception for 'scientific research, captive breeding, public exhibition or

Despite these conservation efforts at the international level, and with various indicators suggesting limited and localized positive consequences to conservation efforts in range states, the conservation status of pangolins remains deeply concerning. Populations of Chinese pangolins in the southern Chinese provinces of Yunnan and Guangxi were estimated to have decreased by 94%.<sup>19</sup>

With all international, commercial trade of wild pangolins being illicit and therefore unreported, researchers rely on various proxies to estimate the magnitude of the scale of pangolin trade, among which are customs seizures data. The UN Office on Drugs and Crime estimates that in 2018, customs agencies seized the equivalent in scales, meat and bones of about 141 000 live pangolins, which alone is revealing of the magnitude of the poaching and hunting pressure that remaining pangolin populations are facing. It has been estimated that, in central Africa alone, between 400 000 and 2.7 millions pangolins are poached every year.<sup>20</sup>

performances, heritage conservation or other special purposes.'<sup>24</sup> 'Special state protection' here refers to the list of protected species (保护动物), which in China is divided into several categories based on their protection levels. All three species of pangolin found in China have been 'level one protected species' (国家一级保护动物) since June 2020, which increased the penalties and sentences faced by traffickers but does not technically ban all domestic and international pangolin trade in China.

In order to use pangolin scales in the manufacturing of TCM drugs and other items, companies in China can obtain a permit from the State Forestry and Grassland Administration (SFGA),<sup>25</sup> which is allowed by China's Wildlife Protection Law for vaguely defined 'special purposes'. These permits are, however, not delivered in a streamlined and centralized way but by provincial-level SFGA bureaus.

Drugs containing pangolin scales (as well as a selection of other endangered species) cannot be legally sold without the CNWM logo being displayed on their 'smallest selling units', as underlined by the

SFGA notice n°242 (2007): 'As of March 1, 2008, all medicinal drugs and products containing [...] pangolin scales [...] must bear the "China National Wildlife Mark" on the packaging of the smallest sales unit before entering circulation.'<sup>26</sup> This does not, however, imply that online advertisements for pangolin-derived products have to display the CNWM as long as it appears in the delivered product.

The CNWM has four main functions:

- to inform customers that the drug contains ingredients derived from a protected species;
- to let them know which species is concerned;
- to inform them that the ingredient was legally sourced; and
- to tell them how it was sourced (whether from the wild or from farms).

In addition to regulations directly related to the wildlife trade, manufacturers also need to obtain formal authorizations from relevant health and safety departments. Among many other regulations, the packaging of TCM drugs needs to display a code issued by the National Medical Products Association (NMPA), which certifies that drugs have been produced in line with health regulations. According to NMPA regulations, drugs also need to display a list of their ingredients.

Our research confirms, based on a larger dataset than in previous research, that the CNWM requirement remains largely unobserved (at least in online advertisements), while other legal requirements (such as those from the NMPA) are being adhered to.

This is significant, as the CNWM label is the only means that customers can use to directly verify whether TCM products have sourced wildlife ingredients – such as pangolin scale – through legal and sustainable channels. Recently published documents by the SFGA indicate that it recently commissioned China's National Wildlife Research and Development Center to entirely redesign CNWM logos to better reflect wildlife protections requirements in China, albeit few details are known at this stage.<sup>27</sup>

*Even though only eight drug formulas are allowed by the Chinese Pharmacopoeia to contain pangolin, this study found 105 drugs containing pangolin for sale online.*

## How do manufacturers qualify for permits and why are stockpile and supply chains important?

There are four potential cases in which a permit for the use of pangolin scales in TCM manufacturing can be issued: the scales must be from a Chinese pangolin (not other species) or from another species that was imported before 2007, when China started to regulate its domestic pangolin scale trade. Alternatively, TCM manufacturing companies can source their scales supply from a verified government stockpile, although stockpile management has been found to be 'dubious' in previous research.<sup>28</sup> Last, the Chinese law technically allows for scales to be supplied from pangolin breeding centres in China, and while China's Ministry of Industry and Information Technology has shown interest in supporting pangolin breeding centres,<sup>29</sup> these efforts have either failed (until very recently)<sup>30</sup> or else constituted fraudulent attempts at smuggling foreign specimens into China.<sup>31</sup>

Without information about the size of China's scale stockpiles and supply chains, there are several concerns about this system. One is that illegally trafficked scales are potentially being laundered into licit supply chains, and the other is that seizures of pangolin scales could themselves be channeled into these stockpiles, thereby allowing trafficking to fuel legal supply.



# INSIGHTS FROM MONITORING ONLINE ADVERTISEMENTS FOR PANGOLIN-DERIVED PRODUCTS

▲ A live pangolin confiscated from the illegal trade, at a secure location in Indonesia.  
© Shutterstock

The following sections consider what we can tell about the structure and characteristics of the market for pangolin-derived products offered for sale online – including examples of possible systemic attempts to conceal activity that could be illicit, dynamics that facilitate the growth of the market and deprive consumers of necessarily sourcing information, and the potential risk of international shipments that would be illegal.

## Structure of Chinese and foreign markets

### Market characteristics: size and location of data set

Our study found 884 relevant detections in Chinese and 54 in English. The study's dataset indicates that the market catering to Chinese-speaking consumers is much larger. In addition, most TCM drugs – even the most well known in China – were present in limited quantities in sites oriented to English-speaking customers.

This difference in scale is noteworthy, as vendors with access to a larger market are likely to be less inclined to ship their products internationally. As all pangolin species are

*The complexity of the regulation process creates loopholes – as seen in recent scandals involving the laundering of imported African pangolins.*

listed in CITES Appendix I, any commercial trade of wild pangolin-derived TCM drugs across international borders would necessarily be illegal.<sup>32</sup> Western vendors appear to be less aware of (or more inclined to breach) this regulation, with a significantly higher share of English-language detections originating from e-commerce platforms that offer to ship their products internationally. Despite the wide difference in size across both datasets, we found more advertisements for pangolin-derived products posted on websites that ship internationally in English (39) than in Chinese (37). Among these English-language advertisements potentially targeting international customers, 18 were posted on websites operating from China (including Hong Kong), 12 from the US distantly followed by European (one in Russia, New Zealand and the UK) and South East Asian countries (two in the Philippines).

It should again be emphasized that the foregoing findings speak to the theoretical international availability of products claiming to contain pangolin products; however, due to the methodology used in this study, authors are not able to independently verify if drugs advertised as containing pangolin scales are actually made with pangolin scales.

### Most commonly traded drugs

Over the course of our research, we found advertisements for 114 different drugs that are listed as containing pangolin scales in specialized encyclopedias such as the Encyclopedia of Chinese Traditional Medicine (ETCM).<sup>33</sup> Out of these 114 drugs, 22 have been detected at least 10 times, listed in the table below:

DRUG NAME	NUMBER OF DETECTIONS	DRUG NAME	NUMBER OF DETECTIONS
[抗栓胶囊] Kangshuan Jiaonang	71	[利咽灵片] Liyanling Pian	25
[生乳灵] Shengruling	67	[特制狗皮膏] Tezhi Goupi Gao	20
[前列回春胶囊] Qianlie Huichun Jiaonang	44	[回天再造丸] Huitian Zaizao Wan	18
龟龄集 Gui Ling Ji	41	[独角膏] Du Jiao Gao	18
[拔毒膏] Badu Gao	41	[东方活血膏] Dongfang Huoxue Gao	16
[万灵五香膏] Wanling Wuxiang Gao	40	[正骨膏] Zhenggu Gao	16
[杜记独角膏] Duji Dujiao Gao	35	[通乳颗粒] Tongru Keli	15
[抗栓再造丸] Kangshuan Zaizao Wan	32	[参桂再造丸] Shengui Zaizao Wan	14
[京万红痔疮膏] Jingwanhong Zhichuang Gao	30	[回生再造丸] Huisheng Zaizao Wan	14
生乳汁 Shengruzhi	27	[中风再造丸] Zhongfong Zaizao Wan	11
金甲排石胶囊 Jinjia Paishi Jiaonang	27	[仙方活命片] Xian Fang Huo Ming Pian	10

**FIGURE 4** Most commonly traded drugs claiming to contain pangolin.

Most of these drugs are formulas that are produced by multiple manufacturers, which supply drug companies. Each of the drugs listed in Figure 4 is available from a number of different manufacturers, all of whom presumably need to manage their own supply of pangolin scales. For example, the most recurrent TCM drug in the data collected for the study, Kangshuan Jiaonang (an anti-thrombotic medication that contains pangolin scales, processed in high-heat sand), is available from at least 64 different manufacturing companies or wholesale distributors such as QGYYS.net.<sup>34</sup>

These manufacturers are based in several provinces, and approval for the use of scales in TCM drugs is delivered by provincial forestry administrations. There is no unified national pangolin stockpile-management system. This makes tracking the supply of pangolin

scales from government stockpiles to drug companies (via manufacturers) extraordinarily complex.

This complexity presents a particular challenge for conservationists who want to ensure that the legal pangolin-containing medicine industry does not pose a threat to wild pangolin populations. Organized-crime experts and some conservationists suspect that large seizures of trafficked pangolin scales are destined to be laundered into 'legal' TCM products, which recent court cases in China confirm is a modus operandi.<sup>35</sup> The lack of transparency in the stockpile-management systems makes this difficult to independently ascertain. This is one reason that underscores how serious it is that companies selling pangolin-containing drugs do not comply with the existing regulations (such as the requirement to display the CNWM label) that exist to ensure compliance with the licit sourcing of pangolin scale.



The China National Wildlife Mark label. The CNWM is supposed to vet the legal and sustainable sourcing of wildlife products. © yao.xywy.com

## Chinese agents

Our research revealed that a significant feature of the Chinese market appears to be the presence of an additional layer of intermediaries within the supply chain, which do not directly market drugs containing pangolin but rather offer a wide range of services related to TCM medicine and, in most cases, provide direct links to active online advertisements (likely against a fee). These specific actors, neither manufacturers nor sellers, are referred to as 'agents' within the context of this study.

These agent websites, whose role in the trade in pangolin scale has not been previously identified or discussed, seem to be critical actors in pangolin-derived supply chains in China, as they constituted more than half of our detections in Chinese (64%, or 572 detections). Because agent websites do not themselves sell pangolin-containing items, they do not need to abide by the same rules as other TCM e-commerce platforms. This could potentially be further complicating the already

opaque trading provisions, causing additional confusion for customers; indeed, it is possibly even directly encouraging demand for illicit products. The (compulsory) display of the CNWM, for instance, is more than twice as much present on e-commerce platforms than it is on agent websites.

Agent websites are most often health-related service websites, which provide information or even diagnostics on various conditions and offer semi-personalized selections of TCM drugs based on users' inputs. Some of these agent websites promise a diagnostic in under five minutes based on a textual description of symptoms by users and an uploaded picture (see photo in the annex).

Some of these websites are relatively open about potential collaboration with pharmaceutical companies, with company registration links sometimes present on their main pages. Kuaisu Wenyisheng, for instance, appears to allow pharmaceutical companies to register on the website for free via a simple webform and the uploading of official authorizations and certificates (exploitation licence, good manufacturing practices, etc.). Although the details of the partnership between agent websites, manufacturing companies and sellers are not known (and differ from one platform to another), it seems likely that agent websites get a percentage of the fee when customers/companies buy TCM drugs through them.



Main page of Kuaisu Wenyisheng. The text enclosed in a red box translates as 'Ask for free, answer in less than five minutes'; the text enclosed in a yellow box reads 'pharmaceutical company registration for free'. © <https://yp.120ask.com>

## Key players in the online TCM drug market

Based on the results of the study, we were able to identify several key platforms involved in the marketing of products that list pangolin as an ingredient. By this, we mean that pangolin is either listed as an ingredient according to TCM encyclopedias or because pangolin scales are listed as ingredients in the advertisement or on

the accompanying photograph. These platforms all have different business models, but they can broadly be divided into two categories: direct sellers and 'agent' websites. All of the platforms cited in this report were contacted by the GI-TOC for comments and as part of private sector engagement efforts, but none of them replied.<sup>36</sup>

### DIRECT SELLERS

#### KangAiDuo / 康爱多 ([www.360kad.com](http://www.360kad.com))

KangAiDuo was founded in Guangzhou in 2010 and is primarily owned by Guangdong Tai'antang Pharmaceutical Co., Ltd. The KangAiDuo group combines several traditional physical pharmacies based in Guangzhou and elsewhere, an online and WeChat store with over 10 000 drugs references, and an online pharmaceutical/medical consultation service.

In the course of our research, we found 116 advertisements offering drugs listing pangolin

products as ingredients on KangAiDuo. Products most commonly advertised on the KangAiDuo platform include Gui Ling Ji, Qianlie Huichun Jiaonang, Shengruling and Jinjia Paishi Jiaonang.

One of the major players of the online business-to-consumer pharmaceutical market, KangAiDuo, seem to comply strictly with Chinese health regulations and almost systematically displays key information such as their NMPA code, the complete list of ingredients (which explicitly includes pangolin in the overwhelming majority of cases) and the

manufacturing company. However, wildlife-related regulations are mostly unacknowledged: less than 14% of the KangAiDuo advertisements (16 out of 115) display the compulsory CNWM on drugs

packaging. Additionally, KangAiDuo's terms and conditions make no reference to wildlife-related regulations in general or China's Wildlife Protection Law in particular.

An advertisement for Kangshuan Jiaonang posted on KangAiDuo, with the NMPA code and manufacturer information highlighted. The CNWM label is not displayed on the product packaging that is advertised on the website. © 360kad.com

### Jingdong / 京东 (<https://global.jd.com>)

Although Jingdong does not appear as much as other websites in the data collected for this study (with only 17 detections), the presence of the Chinese e-commerce juggernaut raises interesting questions.

Founded in 1998 under the name 360buy, Jingdong is currently the second-largest e-commerce platform in China, just behind the Alibaba-owned Tmall. Unlike Alibaba (whose compliance efforts seem to have contrasted results, as detailed below), Jingdong has not joined the Coalition to End Wildlife Trafficking Online, a partnership that brings conservationist organizations and tech companies together to prevent online wildlife trafficking.

Among the drugs sold on Jingdong are Jing Wan Hong, Tezhi Goupi Gao, and Gui Ling Jin or Wudi Yaojiu, an expensive medicinal wine that is usually produced using pangolin-derived products. Many of these advertisements are deeply problematic; as Jingdong is a generalist website, key information regarding health and wildlife regulations are most often not displayed in any systematic manner. CNWM labels never appeared in these adverts, NMPA numbers were very often missing; even more concerning is the absence of lists of ingredients (which appear neither in the description nor on the image of the packaging). This could result in customers unknowingly buying pangolin-derived items.

### **Xinglin Chuntang / 杏林春堂 ([www.xlctyd.com](http://www.xlctyd.com))**

Xinglin Chuntang is another e-commerce platform that specializes in TCM drugs. It was founded in 2013 and is based in Chengdu, Sichuan province, where the group operates a network of small TCM clinics. Much less well-known than the websites listed above, Xinglin Chuntang was fined by both Shenzhen (in 2020)<sup>37</sup> and Chengdu (in 2021)<sup>38</sup> municipal governments for violating hygiene norms. Xinglin Chuntang's business model is nonetheless quite similar to that of

### **CHINESE AGENT WEBSITES**

#### **Kuaisu Wenyisheng / 快速问医生 (<https://yp.120ask.com>)**

With 86 detections, Kuaisu Wenyisheng is one of the most prevalent Chinese agent websites in the data collected for this study. The company behind Kuaisu Wenyisheng, Zhuhai Health Cloud Technology limited was founded in 2002. Zhuhai Health Cloud operates several health-related websites, mostly in the field of telemedicine.

Patients opting for teleconsultation on Kuaisu Wenyisheng (based on a written description of symptoms and a picture taken by the user) are recommended or prescribed various drugs that are detailed on the website's 'medication guidance' page. Although ingredients and NMPA numbers are almost systematically provided, the CNWM label was not displayed in the overwhelming majority of advertisements for drugs that ordinarily contain pangolin-derived products (just 3 out of 86 detections had CNWM labels). These medication guidance webpages do not

KangAiDuo, and both platforms have the same limitations: although advertisements most often offer detailed information about their products, ingredients, manufacturers and compliance with health regulations and wildlife-related regulations are largely absent – a pattern often observed on Chinese e-commerce websites. Out of the 25 advertisements found on Xinglin Chuntang for products usually produced using pangolin, the packaging of only three of the products advertised displayed the CNWM label.

constitute advertisements in themselves, as Kuaisu Wenyisheng does not directly sell drugs; however, the site collects information on prices offered by sellers registered with Kuaisu Wenyisheng and redirects users to their physical store based on their respective location.

#### **Yaopintong / 药品通 (<http://ypk.39.net>)**

Yaopintong is another agent website that gathers information on various TCM drugs and provides links to selling websites within its network, while probably earning a commission in the process. The site was founded in 2006 by a physician and is part of the larger Guangzhou Qisheng Information Technology Co., Ltd. The group manages a number of websites that provide telemedicine consultations, health advice and other related services. As with its competitors, Yaopintong generally abides by health-related regulations but has not implemented prescriptions from China's Wildlife Protection Law: out of 84 detections of advertised product, only four displayed the CNWM label.

药品通 全部分类 安全用药 万家药店 医保助手 请输入药品或疾病名称 搜索

您当前的位置: 药品查询首页 > 中西药 > 生乳汁

**生乳汁**  
处方药物

主要成份: 当归、地黄、黄芪(蜜炙)、党参、玄参、麦冬、**穿山甲(制)**、知母。

功能主治: 补气养血, 滋阴通乳。用于产后阴血亏虚, 乳汁稀薄, 短少。[详情]

用法用量: 口服。一次100毫升, 一日2次。

批准文号: **国药准字Z52020346**

生产企业: **贵州光正制药有限责任公司**

价 格: **¥18** 相关报价>>

温馨提示: 外观包装仅供参考; 药品信息仅供参考医学药学专业人士阅读。

概述 详细说明书 用药经验 用药咨询 药品对比 相关文章 药品图片 全国药店 条码查看

**生乳汁网上报价**

益药 康德乐大药房 CFDA 100毫升 ¥33元 去网上药店看看

声明: 药品通仅提供药品信息展示服务, 不提供任何药品交易服务, 价格信息均来自具备合法资质的网上药店。

Advertisement for Shengruzhi posted on Yaopintong, listing (from top to bottom, highlighted in red) pangolin as an ingredient, NMPA number, manufacturer information and link to e-commerce platforms. © Yaopintong

## The apparent presence of pangolin derivatives on Alibaba-owned sites

Numerous advertisements for drugs such as Guilingji, Duji Dujiao Gao or Tezhi Goupi Gao, all of which usually contain pangolin, can be found on Alibaba-owned websites such as TMall or 1688. This raises concerns about international efforts to promote better regulation of online markets.

Alibaba is a member of the Coalition to End Wildlife Trafficking Online, a multilateral lobbying platform

that works with tech companies to improve their compliance with anti-wildlife-trafficking regulations and has made specific efforts to engage with businesses and actors from China to curb wildlife trafficking online. It should furthermore be noted that 1688 offers international delivery, enabling potential violation of international laws and regulations protecting pangolins.

## Sellers of pangolin-derived items to non-Chinese markets

### THE US MARKET

Over the course of this study, we detected 15 advertisements for drugs that listed pangolin as an ingredient from 11 sellers based in the US, one of the world's largest markets for pangolin scales.<sup>39</sup> Among these 11 businesses, seven operate out of California; this is perhaps due to the combined

factors of a large Asian-diaspora presence and a well-established alternative-lifestyle culture.

Although the sample is too small to draw any definitive analytical conclusions, several elements are noteworthy. Out of 11 pangolin-derived

medicinal products that appear in the data, five are advertising Jing Wan Hong, an ointment manufactured by Tianjin Darentang Pharmaceutical.<sup>40</sup> Attempts at selling Jing Wan Hong appear 35 times across the whole all-language dataset, which makes it the eighth most advertised product that usually contains pangolin appearing in the data collected for this study.

Equally interesting is the relatively significant presence of incense manufactured in Nepal and Bhutan but marketed by a Minneapolis-based company called Essence of the Ages.<sup>41</sup> Cascade

detected four postings of these incense sticks, which claim to contain pangolin, and further manual research suggests that many more products advertised on the Essence of the Ages website may also contain pangolin scales – *nagi*, a specific term use to describe scales, often appears untranslated, which increases the risk of customers being misinformed (and escaping text-based detection mechanisms such as Cascade). Manual research suggests that there are at least 15 types of incense advertised on the website that contain pangolin scale.



Advertisements for incense on the US website Essence of the Ages. Left: Advertisement for Kuenzang incense, listing the presence of pangolin scale. Right: Advertisement for Ribo Sangtshoo incense, possibly concealing the presence of pangolin scale as an ingredient. © Essence of the Ages

## POTENTIAL CALIFORNIAN MANUFACTURE OF PANGOLIN-DERIVED TCM DRUGS

Among the companies present in the data collected for this study, one Californian company seems to not only sell but also manufacture drugs that claim to contain pangolin products. The Californian company Bio Essence, founded in 2000<sup>42</sup> and headquartered in Irvine, Orange County, appears to manufacture at least two drugs that claim to contain pangolin scale, as listed on Bio Essence's own website. In 2017, the current manager of Bio Essence Corporation, Yin Yan, created another company called Bio Essence Pharmaceutical, Inc., and registered it as a health-supplement manufacturer, sharing an address with Bio Essence Corporation.<sup>43</sup> Drugs manufactured by

Bio Essence are marketed as herbal supplements, as explicitly written on their packaging.

Bio Essence provides TCM consultations and training services to patients and students, while also producing tailored blends of TCM remedies. Among these are two drugs that list pangolin scale as an ingredient – namely, Zhen Ren Huo Ming Ying (真人活命飲) and Fu Yuan Huo Xue Tang (復原活血湯) – as evidenced in the picture below. Although marketed as 'proprietary blends', these drugs appear to copy the names and formulas of well-known medicines found on the Chinese market, including another pangolin-derived drug known as Fu Yuan Huo Xue Tang, albeit written with different Chinese characters (復元活血汤).<sup>44</sup>

**SUGGESTED USE:**  
Adults take 3 grams with warm water 2-3 times per day or as directed by your healthcare practitioner. Please consult with your physician before taking this product.

**KEEP OUT OF REACH OF CHILDREN. STORE IN A COOL, DRY PLACE.**

**Bio Essence Health Science**  
8 Studebaker  
Irvine, CA 92618  
1-800-538-1333  
www.bioessence.com

**LOT #:**  
**EXP:**

**SUGGESTED USE:**  
Adults take 3 grams with warm water 2-3 times per day or as directed by your healthcare practitioner. Please consult with your physician before taking this product.

**KEEP OUT OF REACH OF CHILDREN. STORE IN A COOL, DRY PLACE.**

**Bio Essence Health Science**  
8 Studebaker  
Irvine, CA 92618  
1-800-538-1333  
www.bioessence.com

**LOT #:**  
**EXP:**

**BIO ESSENCE<sup>®</sup>**  
HEALTH SCIENCE

真人活命飲

**ZHEN REN HUO MING YIN**  
Angelica & Mastic  
Decoction

2171  
**NET WT. 3.53 oz (100gm)**  
HERBAL SUPPLEMENT

**BIO ESSENCE<sup>®</sup>**  
HEALTH SCIENCE

復原活血湯

**FU YUAN HUO XUE TANG**  
Dong Gui &  
Persica Decoction

2398

**Supplement Facts**  
Serving Size: 3 grams  
Servings Per Container: 33

Amount Per Serving	% DV
Proprietary Blend	3g †
Honeysuckle Flower (Jin Yin Hua), Tangerine Peel (Chen Pi), Chinese Angelica Root (Dang Gui), Siler Root (Fang Feng), Angelica Root (Bei Zhi), Licorice Root (Gan Cao), Fritillary (Bei Mu), Trichosanthes Root (Tian Hua Fen), Frankincense (Ru Xiang), Myrrh (Mo Yao), Gleditsia Spine (Zao Jiao Ci), Pangolin Scales (Chuan Shan Jia)	
†Daily Value (DV) not established	

Other Ingredients: Starch  
No Preservatives, Artificial Flavoring, Or Color Added.

**Supplement Facts**  
Serving Size: 3 grams  
Servings Per Container: 33

Amount Per Serving	% DV
Proprietary Blend	†
Rheum Rhizoma (Da Huang), Duplexium Radix (Chai Hu), Trichosanthes Radix (Gua Lou Gen), Angelica Sinensis Radix (Dang Gui), Persica Semen (Tao Ren), Carthamus Flos (Hong Hua), Glycyrrhiza Radix (Gan Cao), Manitis Squama (Chuan Shan Jia)	
†Daily Value (DV) not established	

Other Ingredients: Starch

Labels for Zhen Ren Huo Ming Yin and Fu Yuan Huo Xue Tang, manufactured by Bio Essence, with pangolin scale listed in the ingredients (highlighted).

© Bio Essence

## THE RAW-SCALES MARKET

While Cascade searches were designed to focus on TCM drugs, several detections dealt with raw or semi-processed pangolin scales (one of them is for a whole animal), offering limited insights into that specific market segment. Out of a total of 924 detections for pangolin-derived products, 12 were for advertisements for raw scales.

Seven of these 12 advertisements were from English-language websites that offer international

shipment. This obviously constitutes a major source of concern, especially given the profile of some of these companies: at least two of them (based in China and Russia) are wholesale companies that ship scales in large quantities, as shown in the photo below. These findings also intersect with the manufacturing of pangolin-derived drugs in Western countries identified in the course of the research.

**BUY-FOODS**  
GLOBAL WHOLESALE FOOD MARKETPLACE

[Login](#) [Register ?](#)

[+ POST AN AD](#)

SELL BUY

WHAT ARE YOU LOOKING FOR?

Only titles
  With photos
 

SEARCH >

[ADVANCED SEARCH](#)

Sell / Raw materials and nutrition supplements / Ingredients / pangolin scale

22 SEPTEMBER

**PANGOLIN SCALE**

Company name	GRACE GRASS LTD
Product located	China, Ningxia, Shanghai
Brand name	pangolin scale
Product features	kg
Product status	Frozen
Product type	Packed, Inorganic
Primary package	kg
Amount in the package	24 piece per carton
Quantity Of (boxes, cases, etc)	28 kg. in the 20 DC cont. (33m <sup>3</sup> )
Quantity available	70000 kg. per days
Shelf life	20 hours
Country original	China
Certificates	ECOCERT, IFS, EPA
Shipment terms	EXW, DDP, CFR

NEGOTIABLE PRICE

[SEND E-MAIL](#)

[PHONE](#)

Offer for raw pangolin scale posted on China.buy-foods.com. 28 kilograms is equal to roughly 78 pangolins.

© China.buy-foods.com

INSIGHTS FROM MONITORING ONLINE ADVERTISEMENTS FOR PANGOLIN-DERIVED PRODUCTS

19

## CHINESE EXPORTS OF PANGOLIN-DERIVED ITEMS

There is some evidence that marketing to consumers outside of China is driven by businesses based in China or Hong Kong. Among the 39 English-language advertisements for products claiming to be pangolin-derived that were posted on websites that offer international shipment, more than half of them (21) were by Chinese or Hong Kong businesses. Some websites mimic the design of well-known state-owned companies in what may be an attempt to dupe potential customers. For instance, the photo below shows Guilingji being marketed on a fake website for Xinhua Bookstore, the largest book retailer in China and one of the country's most iconic companies (now part of the state-owned China Publishing Group). Out of five detections found on these fake Xinhua Bookstore websites, all of them clearly state the presence of pangolin scale in their ingredients. However, only one detection for Guilingji partially displays the CNWM label, and it does so in a way that makes the logo unreadable.

categories > 00 Chinese Natural Herbs > Forgetfulness and Amnesia (5)

**Gui Ling Ji-For impairment memoy,noctural emission(kidney yang deficiency)**

Price: **\$248.00** [BUY NOW](#) [BACK](#)

Feedback: **-80.82%**, 668 sales [Ask seller a question](#)

Shipping: **US-Mainland: \$15.00** [\(more destinations\)](#)

Seller's Country: Hong Kong

Condition: Brand new

Payment with: **PayPal**

5 images [zoom](#)

[f](#) [t](#) [@ Enregistrer](#)

Gui Ling Ji,Guilingji-For Deficiency of the kidney yang marked by impairment of memory,noctural emission

MAIN INGREDIENTS  
 Ginseng Radix Et Rhizoma Rubra,Cervi Pantotrichum,Hippocampus,Lycii Fructus,Caryophylli Flos, **Manis Squama**, Encephalon Passeris,Achyranthis Bidentatae Radix,Cynomorii Herba,Rehmanniae Radix Praeparata,Psoraleae Fructus,Cuscutae Semen,Eucommiae Cortex,Fossilia Cyrtiospiritiferis,Cistanches Herba,Glycyrrhizae Radix Et Rhizoma,Asparagi Radix,Epimedii Folium,Halitim,Amomi Fructus.ect.

Advertisement for Guilingji found on a fake Xinhua Bookstore e-shop. Highlighted in red (from top): Xinhua Bookstore logo, as depicted on the fake websites; partial CNWM label; international shipping; pangolin listed as ingredient. © [biolabs.ecrater.com](http://biolabs.ecrater.com)



# ASSESSING CHINESE AND INTERNATIONAL SALES OF PANGOLIN-DERIVED TRADITIONAL CHINESE MEDICINE DRUGS

▲ Pangolin scales on display in Mong La, Myanmar. © Taylor Weidman via Getty Images

## Lack of transparency and obfuscatory practices

### Attempts at concealing the presence of pangolin scale as an ingredient

There are some significant differences between the ways in which products that appear to be pangolin-derived are marketed to consumers inside China and those outside China. Our research shows that a large number of e-commerce websites marketing to audiences outside China appear to obfuscate the presence of pangolin in the drugs they advertise. Out of 38 detections in English-language advertising

for TCM drugs (therefore excluding incense, wine, raw scales and cosmetics), 14 of them do not mention the presence of pangolins at all, and 10 additional detections use more or less convoluted proxies (such as ‘guanxi anteater’ or ‘armadillo’) to misinform prospective customers.<sup>45</sup> The use of the transliteration, as opposed to translation, of the Chinese characters for ‘pangolin’, or the use of scientific species name in Latin, are among the most common proxies used.

One example of blatant obfuscating attempts in English-language advertisements is Jing Wan Hong, one of the few drugs that seems to have a sizable customer base outside of China (12 detections out of 38). Jing Wan Hong (sometimes marketed abroad as Ching Wang Hung), is a well-known drug manufactured by the Tianjin Darentang Jingwanhong Pharmaceutical Co. Ltd. that lists pangolin scales as an ingredient, as clearly stated in the *Pharmacopoeia* as well as in the ingredients listed in most Chinese-language advertisements available online. As can be seen in the advertisements in the photos below, the same drug with identical packaging is sold on Chinese-language websites with clear references to pangolin (circled in red in the first photo). English-language advertisements detected by Cascade, on the other hand, often did not acknowledge the presence of pangolin in the list of ingredients, as evidenced by the second photo.

Several factors could explain the sharp differences in transparency between Chinese- and English-language advertisements. For cultural reasons, the Chinese-speaking market is likely to be more interested in the list of ingredients than non-Chinese speaking customers would be, which could explain why a much larger share of English-language detections do not list ingredients at all. However, this lack of transparency could also be perceived as an attempt to obscure potential violations of law. It is likely that TCM professionals both in China and abroad are aware that international trade of pangolin-derived products is prohibited, especially since the outbreak of the COVID-19 pandemic. The complex legal environment in China surrounding the domestic trade in pangolins and pangolin scales seems to put much less pressure on actors inside China: out of 884 Chinese-language detections, only eight of them do not make any reference to pangolin as an ingredient.

	NUMBER OF DETECTIONS OF TCM PRODUCTS	DO NOT EXPLICITLY STATE PANGOLIN AS AN INGREDIENT	USE MISLEADING NOMENCLATURE FOR PANGOLIN
Chinese-language	884	8 (1%)	0
English-language	53	14 (26%)	18 (26%)

**FIGURE 5** Transparency regarding the presence of pangolin parts as ingredients.

**HERBSPY**  
HERBS WHOLESALE IN CHINA

SEARCH

good effect for rheumatoid arthritis

CATEGORIES

HOME | SPECIALS | FEATURED PRODUCTS | ALL PRODUCTS | REVIEWS | CONTACTS

Home > Skin disease > Burns and Scalds > Jing Wan Hong Ruan Gao for mild water fire burns and sores

Jing Wan Hong Ruan Gao for mild water fire burns and sores

Model: HERB-BURNS-6  
Shipping Weight: 0.03kg  
Units in Stock: 428

Price: \$8.10

☆☆☆☆ (0 reviews)

Quantity	Unit Price	Save
10-19	\$7.86	3%
20-29	\$7.70	5%
30+	\$7.45	8%

Min: 4

- 4 + **ADD TO CART**

(complete orders **today**, delivered around **24/09/2021**)

Jingwanhong Cream

**INGREDIENTS**

Garden Burnet Root, Chinese Angelica Root, Peach Seed, Gromwell, Radix arnebia seu Lithospermi, Honeysuckle Flower, Chinese Gall, Dahurian Angelica Root, Dragon's Blood, Cochinchina Momordica Seed, Borneol, Poppy Capsule, Rehmannia Root, Coptis chinensis Golden Thread, Carbonized Human Hair, Crinis Trachycarpil, Chinese Lobelia Herb, Ground Beetle, Japanese Ampelopsis Root, Amur Cork-tree, Safflower, Chinese rhubarb, Lightyellow Sophora Root, Sophora Flower Bud, Common Floweringgince Fruit, Stir-fried Atractylodes Rhizome, Red Peony Root, Baical Skullcap Root, Figwortflower Picrorhiza Rhizome, Szechwan Lovage Rhizome, Cape Jasminoides Ellis, Mume Fruit, Frankincense, Myrrh. The auxiliary materials are sucrose and beeswax.

Jing Wang Hong sold on Herbspay.com (ships internationally), without reference to pangolin scale in the list of ingredients. © Herbspay.com

## Low transparency and traceability in Chinese-language detections

In order to be legally sold on the domestic market in China, pangolin-derived TCM drugs need to fulfill several relatively strict criteria, such as displaying their NMPA number as well as including the CNWM label. Our study found that the overwhelming majority of Chinese websites selling pangolin-derived TCM drugs failed to comply with these rules.

Furthermore, our study revealed that there are important discrepancies between the number of advertised drugs that display the NMPA number and those who display the CNWM label. Indeed, the compulsory display of the NMPA number is taken rather seriously by websites selling TCM drugs: more

than 81% of Chinese detections included an NMPA number, in contrast to the CNWM label, which only 9% of relevant Chinese-language data displayed.

There are several possible explanations for this discrepancy. The awareness of Chinese customers regarding food and drugs safety has evolved after several highly publicized cases of public-health scandals linked to poor supervision of drugs manufacturing and marketing processes and corruption. For example, in 2007, the former head of the China Food and Drugs Administration, Zheng Xiaoyu, was sentenced to death for approving certain hazardous medicines.

Some of these scandals have had international consequences, such as the recall of large batches of Chinese-produced heparin (an anticoagulant) by the US Food and Drug Administration in 2008. On the other hand, the awareness of Chinese businesspeople and consumers of wildlife-related regulations and issues at stake is likely to be less advanced. This seems to confirm research that found that TCM practitioners in China had a very low understanding and awareness of pangolin-derived products used in TCM drugs and their related regulatory environment.<sup>46</sup>

The traceability performance of pangolin-scale supply chains on the Chinese TCM market also heightens these concerns. Besides informing prospective customers that the item they are interested in buying contains an ingredient derived from a species threatened with extinction, CNWM labels are supposed to inform customers of the source of the specimens used as ingredients. CNWM labels indeed include a specific letter to note whether the specimen was farmed (F), sourced from the Wild (W) or whether the origin is unknown (N).

As mentioned above, out of 884 Chinese-language detections, only 52 contained a CNWM label (9%

of the total). These included four unreadable logos, but also 30 CNWM labels that did not have any specific code regarding the source of the scales used in the manufacturing of the drug. In addition, nine CNWM labels indicated that the source of scale was unknown, which alone raises significant concerns regarding the efficiency of the pangolin-scale supply chains management system in China.

Some 13 postings had CNWM labels indicating that the pangolin scales were sourced from the wild. CNWM labels carry specific codes that can normally be used to access additional information on the authorization received by the manufacturer from the SFGA.<sup>47</sup> However, a state-run website gives access to limited additional information besides the number of the permit that was issued, and this number cannot be used to access permit documentation, although investigative journalists in China have published some online (see endnote 35).

The SFGA is aware that the CNWM system lacks transparency and has commissioned the National Wildlife Research and Development Center to establish and design a more transparent information system regarding CNWM that will supposedly allow better traceability.<sup>48</sup>

## China National Wildlife Mark labels

In one particular detection, it was evident that the CNWM label only accounted for one threatened species, whereas the drug itself actually contained multiple species. For instance, Zaizao Wan, a drug manufactured by China's largest pharmaceutical conglomerate, Beijing Tongrentang, according to the Chinese *Pharmacopeia* and ETCM contains leopard bone, snake meat, scorpions parts, water buffalo horn and turtle shell, in addition to pangolin scale. While the exact species (and their conservation

status) used in the manufacturing of Zaizao Wan are unclear, the single CNWM label found on Zaizao Wan packaging over the course of this study only indicated the presence of leopard bone (豹骨, *os pardi*), sourced from wild. While this is deeply concerning in itself, since leopards and most big cats in China are CITES level-one protected species (as are pangolins), this practice also misinforms customers and appears to obfuscate the presence of pangolin in the manufacturing of Zaizao Wan.

## Positive signs and enduring concerns

### 'Minus pangolin': TCM with modern characteristics

Although the COVID-19 pandemic has brought unprecedented attention to pangolins as a species, conservation efforts have been implemented for several decades. However, in addition to the numerous blind spots identified in this research, it seems that the implementation of safeguards online remains difficult and that actors are still trying to sell pangolin-derived items abroad, sometimes blatantly evading the law.

Over the course of this research, Cascade mistakenly identified various advertisements for drugs that normally contain pangolin, but whose formulas have been altered to exclude any pangolin scales. This encouraging sign should be underlined, given that the packaging of these drugs unambiguously states that pangolin has been excluded from the list of ingredients. This could suggest that the presence of pangolin scale as an ingredient in various TCM drugs does not constitute a key selling point for consumers.



KH 复元活血颗粒 (去穿山甲)  
\$45.00  
结账时计算的运费。

SIZE 数量  
Bottle (100g) - 1 +

售出

VIEW OUR REFUND POLICY

ADD TO WISHLIST

Please login to add items to wishlist

Advertisement for Fu Yuan Huo Xue Keli on KinHong PTE website, stating that the medicine does not contain pangolin. © KinHong PTE

One key element to be highlighted here, however, is that most of the 'minus pangolin' (去穿山甲) iterations of TCM drugs are being manufactured and/or sold by companies based in Taiwan or Singapore, albeit clearly aimed at the Chinese market as the packaging information is written in simplified Chinese characters. Early and extensive protection measures of pangolins in Taiwan, and the promotion of *Vaccaria segetalis* (colloquially known as 'dried cow basil') as a substitute for scales,<sup>49</sup> is likely to have contributed to the development of these 'minus pangolin' versions of TCM drugs. Although these products clearly target a niche market, their existence suggests the potential for long-standing TCM practices to be adapted into modern versions that are more sustainable.



▲  
Pangolins rescued  
from the illegal trade  
being transported for  
release into the wild  
in Indonesia, 2015.

© NurPhoto via Getty  
Images

## CONCLUSION

Despite pangolins benefiting from the highest protection levels in China and internationally, pangolins and TCM drugs listing pangolin products are still being widely advertised online, without any clear indications about the origin of the scales. This practice raises concerns about how the online market may be fueling demand for illegally trafficked pangolin scales.

Using machine-learning solutions that allowed data collection on a greater scale than previous research, this study has shown that items that claim to be derived from pangolin are widely advertised online. Despite an arsenal of laws and regulations, the online market for pangolin-derived TCM drugs is largely not compliant with the full scope of laws regulating the market. In numerous cases, customers could end up buying and consuming pangolin-derived items without being informed of the impact this has on the environment and global biodiversity.

While the ambiguity of Chinese laws and regulation is a central issue, some sites may also be contributing to the circulation of pangolin-derived items in non-Chinese markets. These items are sold openly online, marketed in English, and offer delivery to global markets (including the US, Canada and Europe). Some of the companies marketing through these sites are themselves based in jurisdictions outside of China, where they may be importing, storing or processing pangolin scales. This suggests that pressure from law-enforcement agencies and self-policing by e-commerce platforms needs to be stepped up in order to deter the illicit trade in pangolin-derived items.

## Recommendations

This study has identified several concerning loopholes within China's pangolin-derived products supply-chain regulation mechanisms and has underlined the weak implementation of trade controls regarding these items. Prospective customers are unable to make informed choices due to the widespread lack of CNWM labels in online advertisements for pangolin-derived products. The national stockpile monitoring system is not transparent. Agent websites are contributing to an important extent to the trade of pangolin-derived products and appear to be utilizing a loophole in the regulatory system. As stated in the introduction to this study, pangolins are threatened with extinction mostly due to the use of their scales in TCM, and the online trade of pangolin-based products only further contributes to this massive environmental crisis.

China has already acted to curb trade of pangolin-derived products and endangered species in general. Should China decide to continue to authorize limited use of pangolin parts for its TCM industry and allow the online trade of pangolin-based drugs and items, it should undertake a much stricter implementation of existing safeguards. The following recommendations are intended to support this.

### To CITES:

- CITES should take note of these findings and encourage Chinese authorities to close existing legal loopholes that still allow the manufacturing and sale of pangolin-derived products.
- CITES should also encourage other member states mentioned here to understand and address the oversights that have allowed pangolin products to be marketed online by companies in their jurisdiction.

### To the SFGA and Chinese authorities:

- **Chinese authorities must take all actions to ensure complete supply-chain transparency on the pangolin-derived TCM market.** In particular, the Chinese government must enforce a robustly monitored and regularly updated government stockpile monitoring system that can be accessed by third parties.
- **China's National Wildlife Protection Law should be altered** so that online platforms selling pangolin-derived products have the same duties as real-world retail shops, including displaying the China National Wildlife Mark on product packaging pictures.
- **Chinese authorities and online TCM e-commerce platforms in China must ensure that customers are correctly informed about the presence of pangolin in various TCM drugs and how this contributes to its extinction.** As explained in this report, there are numerous loopholes and implementation failures that could result in potential consumers making uninformed decisions. Stakeholders should take action in order to ensure that practitioners systematically inform consumers regarding the presence of pangolin derivatives in TCM drugs and their environmental impact.

- **'Agent websites' should be held accountable for the role they play in facilitating online criminal activities and the trafficking of pangolin-derived products.**

As paid intermediaries in the supply chain of pangolin-derived products, 'agent websites' should have to systematically display CNWM logos and be transparent about the presence of pangolin scales. For example, they could ensure that prospective customers are offered alternative drugs that do not contain pangolins.

#### **To private actors outside of China:**

- Online TCM e-commerce platforms outside of China should stop importing, selling and promoting pangolin-derived products, in compliance with national and international laws.

#### **To customs and law enforcement agencies outside of China:**

- Customs and law enforcement agencies outside of China need to be aware that online trade of pangolin-derived products across international borders is still happening and take actions to hold the companies and individuals involved responsible.

# ANNEX: E-COMMERCE PLATFORMS AND AGENT WEBSITES CLAIMING TO SELL PANGOLIN- DERIVED PRODUCTS IDENTIFIED DURING THE RESEARCH

Acupuncture atlanta
Alibaba (阿里巴巴, redirected to Taobao Tmall)
Baiji (益药: 康德乐大药房, 百济新特药房)
Bio Essence
BIZTX (商天下网)
Fuguantang 福冠堂网上药店
BJP321 (东方保健品招商网)
BuyAcupuncture
Changchun People Pharmaceutical Group Co Ltd (长春人民药业集团有限公司)
China Herbal
China Resources Pharmaceutical Group Ltd (华润衢州医药有限公司 (华润医药))
China.Buy.foods
Chinese Acupunctuur entrum
Chinese Herbs Direct
CTA (中国纺织助剂网)
Darentang, Tianjin Zhongxin Pharmaceutical Group Co., Ltd: Darentang Pharmaceutical Factory (天津中新药业集团股份有限公司达仁堂制药厂)
DC Yiyao (鼎诚医药网)
120ask (快速问医生)
Diuretic and Anti-inflammatory Pill

eCRATER
Ehaoyao (好药师网上药店, 北京好药师大药房连锁有限公司)
Epsilon Acupuncture
essence of the ages
Familydoctor (家庭医生)
Fuguantang 福冠堂网上药店
global.fuyanpills
Golden Needle
Green Inc USA
GuideChem (盖德化工网: 采购中心)
Haien Yaoye Zhituan (海恩药业集团, 河南海恩药业有限公司)
Hangzhou Zhuyangxin Pharmaceutical Co. Limited (杭州朱养心药业有限公司)
Tuling (药品价格315网: 免灵)
Heavenly Herba
Henan Huafeng Pharmaceutical Co Ltd (华峰制药, 河南华峰制药有限公司)
Henan Liuhe Pharmaceutical Group Co Ltd (河南六鹤药业集团有限公司)
Herb Spy
Herbal medicine
Herbdot
Herbsbuy 360
Herbspy
Herbspy
Himalayan Trading Post
Homecare Pharmacy (护生堂大药房, 北京乐普护生堂网络科技有限公司)
Inner Mongolia Renze Pharmaceutical Co Ltd (内蒙古仁泽药业有限公司)
JD (京东大药房, 京东集团旗)
JD (京东大药房, 京东集团旗)
Jia Lun Yao Ye Group (嘉伦药业集团, 珠海嘉伦药业集团光彩大药房连锁有限公司)
Jiangxi Yuantong Biotechnology Co Ltd (江西源通生物科技有限公司)
Jianke (健客网)
Jianke (健客网)
Jindong
Jing Wan Hong, Tianjin Darentang pharmaceutical Jingwanhong Co. Ltd (京万红, 天津达仁堂京万红药业有限公司)

Jintongshu: official product website (筋痛舒: 官方厂家直销网站)
Kangmei (康美中药网)
Liaoning Herbapex Pharmaceutical Co Ltd (辽宁上药好护士药业 (集团) 有限公司)
medicastore
Miaoshou (妙手医生医药电商, 圆心大药房)
Qgyyzs (环球医药网)
Yaozui (药最网)
Familydoctor (家庭医生)
Qgyyzs (环球医药网)
Yaozui (药最网)
Qhmed (千虹医药招商网)
Qiming58 (佳寓健康网)
Yaozui (药最网)
Qingqingdao (青岛社区)
sea of Chi
Qingqingdao (青岛社区)
Qiuyi (求医网: 药品库)
QJ (前景加盟网)
SCSDYY (圣丹药宜网)
Sea of Chi
Shen Clinic
Shandong Gaofang: "Dr Tan Ointment Clinic" (山东膏方网: 谭博士膏方门诊)
Shafen Fongshi Ling: official product website (蛇粉风湿灵: 中国唯一官方网站)
Sheng yi Center of Chinese Medicine
Skin Perfect Essential
SJJZTW (桔洲堂医药, 四川桔洲堂医药有限公司)
Skin Perfect Essentials
Pharmnet (医药网)
TCM Skin clinic
SPZS (食品招商网)
Taobao (淘宝网)
Taobao: TMall (redirected from Alibaba)
TCM skin clinic

TCM Treatment
Tcm Treatment
Xinhua bookstore (fake)
Tianya (天涯云商讯)
TRT Pharma, Beijing Tongrentang Pharmaceutical Co Ltd (北京同仁堂制药有限公司)
Tuling (药品价格315网: 免灵)
WeiShi, Hubei WeiShi Bio-Pharmaceutical Co Ltd (威仕生物, 湖北威仕生物药业股份有限公司)
Yue Hwa
Xinyao (上药康德乐大药房)
XLCTYD (杏林春堂网上药店, 深圳市杏林春堂大药房连锁有限公司)
XYWY (寻医问药网: 药品网)
XYZYW (信誉藏药网, 广东雪域藏药连锁有限公司大龙大药房)
Yaofang: Renhe Pharmacy netowrk (Beijing) Pharmaceutical Technological Co Ltd (仁和药房网, 仁和药房网 (北京) 医药科技有限公司)
Yaofangwang (药房网商城)
Yaopinnet (药源网)
Yaozs (东方医药网)
Yaozui (药最网)
Familydoctor (家庭医生)
Familydoctor (家庭医生)
Familydoctor (家庭医生)
Familydoctor (家庭医生)
Yaozui (药最网)
Zangyaow (民药郎藏药网, 广东雪域藏药连锁有限公司大龙大药房)
Zhejiang Haipai Pharmaceutical Co Ltd (浙江海派医药有限公司)
Ziyi Mall (紫一商城)
ZYCTD (中药材天地网)

标题:

详情:

详细描述发病时间，主要症状，病情变化，治疗经过以及想要获得的帮助，描述越详细，医生回复质量越高（20字以上）



添加病情照片  
患处、检查报告或其他资料

性别:

男

女

年龄:

请输入年龄 岁

悬赏:

不悬赏

悬赏后能吸引更多医生回答问题

手机号:

验证码

43129

短信验证码:

短信验证码

获取验证码

提交问题

## NOTES

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# **GLOBAL INITIATIVE**

AGAINST TRANSNATIONAL  
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## **ABOUT THE GLOBAL INITIATIVE**

The Global Initiative Against Transnational Organized Crime is a global network with over 500 Network Experts around the world. The Global Initiative provides a platform to promote greater debate and innovative approaches as the building blocks to an inclusive global strategy against organized crime.

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