

The use of spiny-tailed lizards *Uromastyx* spp. for medicinal purposes in Peninsular Malaysia

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INTRODUCTION

Spiny-tailed lizards *Uromastyx* spp. consist of 20 recognized species that inhabit the deserts and semi-deserts from northern Africa across the Middle East to north-western India (Wilms *et al.*, 2009; Wilms, *et al.*, 2010). Also known as dabb or dhab lizards, they are hunted and traded for their purported medicinal value, as well as for meat and for the pet trade (Mahmood *et al.*, 2011; Subramanean and Vikram Reddy, 2012; Wilms *et al.*, 2012; Das *et al.*, 2013; Pradhan *et al.*, 2014). Large numbers are taken from the wild in Saudi Arabia and sold to middlemen for around SAR1000–1500 (USD9–USD14)¹ (Anon, 2015; Faiza, 2015). Poaching techniques include pouring water or blowing smoke into burrows to force animals out, or shooting them with guns (Reuters, 2013; Faiza, 2015). The lizards are often kept alive until delivery to slaughterhouses, with their spines often broken to prevent them from escaping (Conservation India, 2014; Faiza, 2015).

Of the known *Uromastyx* species, eight are listed in the IUCN Red List of Threatened Species, with two assessed as Vulnerable, three as Near Threatened and three as Least Concern (IUCN, 2015). The entire *Uromastyx* genus has been listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1977, prohibiting international commercial trade in wild specimens of the species unless accompanied

by the required CITES export permits. A study on CITES data trade records of *Uromastyx* spp. reported over 200 000 specimens traded internationally, with an increasing trend after 1994 (Knapp, 2004). Spiny-tailed lizard species are also protected by national laws in many range countries.

Unregulated and unsustainable hunting of spiny-tailed lizards may adversely affect the ecosystem (Yom-Tov, 2003), as they are an important prey species (Conservation India, 2014), and their burrows serve as thermal refuges for many other species (Wilms *et al.*, 2010). These lizards feed on plants and insects, providing some degree of pest control, and are also scavengers (Castilla *et al.*, 2011; Subramanean and Vikram Reddy, 2012).

BACKGROUND

The sale of spiny-tailed lizard parts and products used for traditional medicine in Peninsular Malaysia first came to TRAFFIC’s attention in the early 1990s, when instances were reported by concerned members of the public (C.R. Shepherd, pers. comm., 2013) and were observed by TRAFFIC staff, with night market stalls selling the products sometimes displaying boards explaining the lizard’s purported medicinal values (S. Broad pers. comm., 2015). Such products have reportedly been promoted in Malaysia since at least 1995 as a treatment for over 20 critical illnesses such as diabetes, heart disease, hypertension, gout, kidney problems and sexual dysfunction (Utusan Melayu, 2014) (Fig. 1).



Fig. 1. Material distributed in Malaysia promoting use of spiny-tailed lizard-based traditional medicine as a treatment for over 20 critical illnesses.

¹Exchange rate of USD1=SAR3.75 (OANDA, September 2015).



Fig. 2. Spiny-tailed lizard-based products displayed and promoted at the Malaysian Agriculture, Horticulture and Agrotourism Fair, 2014. Picture shows skins, capsules, coffee-mix, live animals, a video showing how spiny-tailed lizards are being captured in the wild and a photo book describing how the animal is further processed.

In 2012, a vendor was reportedly offering spiny-tailed lizard-based products at the biennial Malaysia Agriculture, Horticulture and Agrotourism (MAHA) Fair. During a visit by the first author to the MAHA Fair in 2014, the vendor was found promoting such products, including capsules, oils, dried skins and coffee-mix sachets, along with six live juvenile spiny-tailed lizards (Figs. 2 and 3) (Or, O.C., pers. obs.). When asked, the vendor stated that animals used for medicinal production were wild-caught Egyptian Spiny-tailed Lizards *Uromastyx aegyptia* sourced from Egypt, and that no successful commercial captive breeding facilities currently exist. In 2013, TRAFFIC received photographs from an anonymous source showing a roadside vendor selling spiny-tailed lizard-based products and displaying live spiny-tailed lizards at the National Mosque compound in Kuala Lumpur.

These ad-hoc reports of trade led to a more comprehensive study by TRAFFIC in 2015 to assess the uses and legality of spiny-tailed lizards traded for medicine in Malaysia.

LEGISLATION

In Malaysia, federal laws apply across the nation and take precedence over State laws enacted by State Legislative Assemblies. However, under the constitution of Malaysia, some federal laws are applied differently in Sabah and Sarawak on a number of matters, such as national resource management. As CITES-listed species, international commercial trade in spiny-tailed lizards is regulated by the *International Trade in Endangered Species Act 2008* (federal law). Individuals violating this Act can be fined up to MYR100 000² (USD27299) or sentenced to seven years' imprisonment, or both, upon conviction. Spiny-tailed lizards are further protected as a genus under the

Wildlife Conservation Act 2010 in Peninsular Malaysia, *Wild Life Protection Ordinance 1998* in Sarawak and *Wildlife Conservation Enactment 1997* in Sabah. In Peninsular Malaysia, where the trade is observed in this study, any violation of the *Wildlife Conservation Act 2010* carries a fine of up to MYR50 000 (USD13 650) and/or two years' imprisonment. The penalty is higher where immature or female specimens are involved.

Furthermore, under the *Sales of Drugs Act 1952*, all pharmaceutical products for sale in Malaysia, including traditional medicines, require compulsory registration with the Drug Control Authority under the Ministry of Health's National Pharmaceutical Control Bureau (NPCB). The *Medicines (Advertisement and Sale Act) 1956* requires that all medicines for sale list all active constituents and ingredients in English or Bahasa Malaysia.

METHODS

The availability of spiny-tailed lizard-based products used for medicinal purposes in Kuala Lumpur and the State of Selangor was assessed between January and June 2015. These areas were selected due to previously reported cases of spiny-tailed lizard-based products being offered for sale, and based on background research identifying the highest number of distributors there.

An internet search in Malay and English of websites in Malaysia on the availability of spiny-tailed lizard products was first conducted using key words commonly referenced for such products: "*Ubat Dhabsinai*" (Dhabsinai medicine), and "*ubat dhab*" and "*dhab sinai*", both of which refer to *Uromastyx*-based medicine. From this search, a total of 143 spiny-tailed lizard product distributors were found and contacted directly by phone. Researchers used semi-structured methods to enquire about spiny-tailed lizard products sold.

Rapid market surveys were then conducted at locations (Kota Damansara, Shah Alam, Masjid Jamek and Chow Kit) where researchers, posing as potential buyers, investigated traditional medicine shops and night



Fig. 3. A live sub-adult Egyptian Spiny-tailed Lizard *Uromastyx aegyptia* displayed at the MAHA Fair, 2014. This species is preferred for medicinal use due to its large size.

²Exchange rate of USD1=MYR3.78 (OANDA, June 2015).

ITEMS	PRICE PER ITEM					
	Kuala Lumpur ¹		Selangor ¹		MAHA 2014 ²	
	MYR	USD	MYR	USD	MYR	USD
Live animal	N/A	N/A	N/A	N/A	7000 [^]	2071
Medicated oil (30 ml)	20–45	16.22–11.90	N/A	N/A	30	8.88
Capsules (60 capsules)	70–90	18.52–23.81	80–90	21.16–23.81	90	26.63
Fats	45–50	11.90–13.23	45–50	11.90–13.23	N/A	N/A
Capsules, with additional herb known as Manjakani*	50–90	13.23–23.81	80–90	21.16–23.81	N/A	N/A
Coffee mix (beverage)	N/A	N/A	N/A	N/A	3	0.89

Table 1. Advertised prices of spiny-tailed lizard-based products recorded in this study from market surveys, direct communications with distributors and at the MAHA Fair, 2014. [^]A price was quoted even though the trader claimed the animals were not for sale; *A new product launched in 2015 for women containing Manjakani, a herbal ingredient.

¹Exchange rate of USD1=MYR 3.78 (OANDA, June 2015); ²Exchange rate of USD1=MYR 3.30 (OANDA, November 2014).

markets for medicinal products that were displayed on the shelf. Where possible, vendors were asked about the availability of products, prices and types of product. No products were purchased.

To ascertain the levels of legality, data relating to the number of specimens of spiny-tailed lizard species imported into Malaysia between 1990 and 2014 were extracted from the UNEP-WCMC CITES trade database (UNEP-WCMC, various dates). Information from 1990 was included as reports on the trade in spiny-tailed lizard products first emerged in the 1990s.

RESULTS

Availability of spiny-tailed lizard-based products in Peninsular Malaysia

Direct market observations

Of 25 standalone Malay traditional medicine shops and three night markets visited, spiny-tailed lizard products were only observed for sale at two shops, located in Chow Kit, which held the highest concentration of traditional medicine shops of the areas surveyed. One shop had only one bottle of capsules (60 capsules/bottle) for sale, while the other had a maximum of 52 bottles of capsules stacked on a shelf behind the counter. Neither shop had any other spiny-tailed lizard products, with one trader saying that it was “very hard to get stock”, and that “this is a new thing and other shops are starting to stock it”, signalling a potential increase in future availability. Most of the other traders interviewed were not aware of the existence of this product. Some were unfamiliar with the term “*dhab*” but some recognized the trade term “*dhab sinai*” despite not selling *dhab* products.

In addition to the surveys in Kuala Lumpur and Selangor, spiny-tailed lizard products (capsules, oil and dried skins) were also observed for sale in two locations on separate occasions in the State of Perak during the survey period (Or, O.C., pers. obs; Muhamad, H.S., *in litt.*, May 2015).

Direct communications with listed product distributors

Of the 143 distributors across Peninsular Malaysia found through online searches during the course of the survey, 66 based in Kuala Lumpur and Selangor were contacted, of which 53% (n=35 individuals) responded to questions about the availability of spiny-tailed lizard-based products. Of these, 86% of individuals claimed they had spiny-tailed lizard-based products available for distribution in the form of capsules, fats and oil, while the rest said that they were no longer stocking the product. It was not possible to assess the actual quantities of product types that were available.

Internet research

Spiny-tailed lizard-based medicinal products could be easily purchased online and are promoted on many websites and open Facebook pages. A prominent Facebook page offering spiny-tailed lizard-based medicinal products shows a total of 7210 “Likes” and another with 1978 “Likes” (as of 4 January 2016), suggesting a minimum number of people who have seen the advertisements and could be potential consumers.

Only one brand of spiny-tailed lizard-based product was found during the study, which is registered under a local company and manufactured in Malaysia. It seems to be the only company in Malaysia selling this brand to traditional medicine shops and independent distributors in Peninsular Malaysia. Products available were in the forms of capsules, oils, fats³, coffee-mix and as whole dried skins. From the conversations with traders and online sources, three species are reportedly used: Egyptian Spiny-tailed Lizard *Uromastix aegyptia*, Sudan Mastigure *U. dispar* and North African Spiny-tailed Lizard *U. acanthinura*.

³Sellers use the term “*lemak*” for fat taken directly from the animal, and either sold raw or processed into oils.

Prices

Market prices for various spiny-tailed lizard products ranged from between MYR3 (USD0.89) for a packet of coffee-mix claiming to contain spiny-tailed lizard derivatives, to MYR50–90 (USD13.23–23.81) for a bottle of 60 capsules, which was the most commonly available product. A live animal was said to be worth MYR7000 (USD2071) but was not for sale (Table 1).

CITES trade records

According to the UNEP-WCMC CITES trade database, a total of 834 live animals categorized as “live” were imported into Malaysia between 2000 and 2014 (Table 2), with no records available prior to that. Many animals were re-exported from the USA, and mostly originated from Mali (Table 2). The importation of parts or derivatives has never been recorded on the database. Although spiny-tailed lizard-based products were observed for sale in the country in 1994 (S. Broad, pers. comm., 2015), there were no records of spiny-tailed lizards being imported into Malaysia between 1990 and 1999, which suggests that during the 1990s, any animals or derivatives brought into the country were imported without official documentation.

DISCUSSION

Legality issues of trade in Malaysia

As stated above, only one product brand is being offered for retail sale in Malaysia, and appears to be owned by a Malaysian-registered company. It has only been permitted to keep one species—Sudan Mastigure—according to the approval document displayed on the company’s website. However, there are claims by the trader in online sources that these spiny-tailed lizard-based products are made of Egyptian Spiny-tailed Lizard. Nowhere on the packaging

of products observed for sale are any spiny-tailed lizard species mentioned (Fig. 4), despite their being advertised as the main active ingredient. It is possible that by not listing the species on the ingredients list, manufacturers evade screening processes by NPCB and DWNP.

Despite the reported sale of spiny-tailed lizard-based medicinal products in Peninsular Malaysia since the early 1990s (Utusan Melayu, 2014; S. Broad, *in litt.*, February 2016), the CITES trade database has no record of the importation of this genus into Malaysia between 1990 and 1999, and no records of parts and derivatives (UNEP-WCMC, various dates). This does not correspond with the sellers’ claims on their website that dried spiny-tailed lizard (assumed to be parts and derivatives) were obtained from suppliers in Egypt for further processing into products in Malaysia. Furthermore, Egypt has imposed an export ban on some *Uromastyx* species including *U. aegyptia* since 1992 (CITES, 1992). This suggests that animals and their parts may have been imported into Malaysia without official documentation (i.e. contravening CITES). An unverified source from 2010 claimed that he had smuggled live spiny-tailed lizards from Jordan into Malaysia in his check-in bag (Kamato, 2010) and it is possible that some products could have been sourced from smuggled animals. These apparent discrepancies should be checked and verified by the authorities.

From 2013–2014, three trade observations about the sale of spiny-tailed lizard-based products involving one night market stall and two premises were reported to the Department of Wildlife and National Parks (DWNP). Two of the raids did not find any spiny-tailed lizard parts and derivatives, while another resulted in confiscation of two suspected spiny-tailed lizard trophies, with investigations ongoing (MYCAT, 2015).

As a traditional medicine, spiny-tailed lizard-based products in the form of capsules sold need to be (and have been) registered by NPCB. However, despite the claims

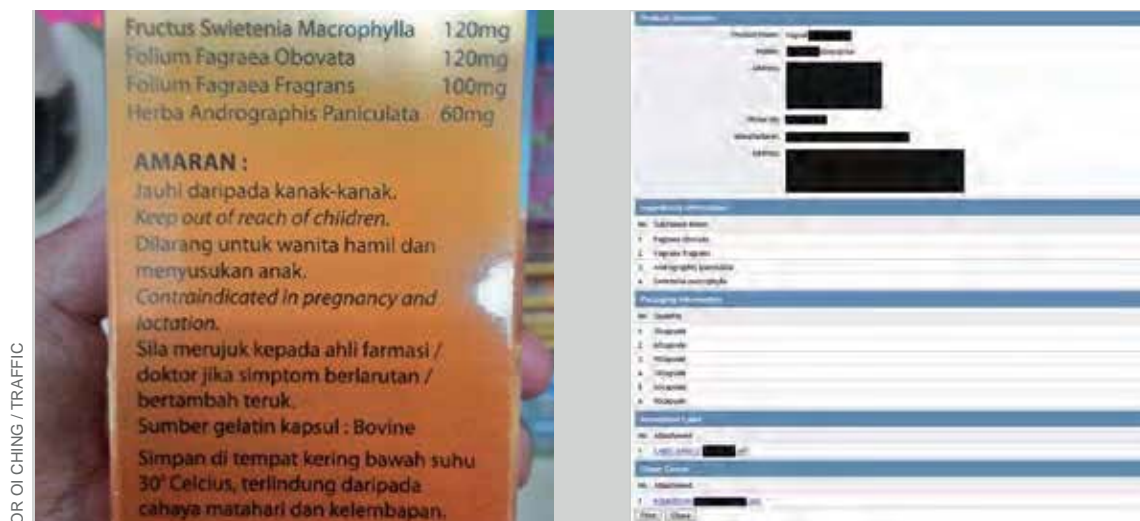


Fig. 4. Spiny-tailed lizard derivatives are not included in the list of ingredients for the Ministry of Health (MOH) registration of this medicinal product (nor on the product packaging, left).

Source: MOH Pharmaceutical Services Division

Year	Taxon	Exporter	Origin	Importer reported quantity	Source ¹
1990–1999		No records of trade			
2000	<i>Uromastyx dispar</i>	Ghana	Mali	10	W
2005	<i>Uromastyx geyri</i>	USA	Niger	20	W
2005	<i>Uromastyx ocellata</i>	Sudan		50	W
2006	<i>Uromastyx aegyptia</i>	Jordan		20	C
2006	<i>Uromastyx ornata</i>	Jordan		30	C
2007	<i>Uromastyx dispar</i>	USA	Mali	10	W
2007	<i>Uromastyx geyri</i>	USA	Mali	10	W
2008	<i>Uromastyx dispar</i>	Mali		4	W
2008	<i>Uromastyx geyri</i>	USA	Niger	25	W
2009	<i>Uromastyx dispar</i>	USA	Mali	6	W
2009	<i>Uromastyx geyri</i>	USA	Mali	16	W
2010	<i>Uromastyx acanthinura</i>	Sudan		200	W
2010	<i>Uromastyx geyri</i>	USA	Ghana	10	W
2010	<i>Uromastyx ocellata</i>	Sudan		200	W
2010	<i>Uromastyx ornata</i>	Sudan		200	W
2011	<i>Uromastyx</i> spp.	USA	Mali	9	W
2011	<i>Uromastyx</i> spp.	USA	Chad	2	W
2011	<i>Uromastyx geyri</i>	USA	Mali	8	W
2012	<i>Uromastyx geyri</i>	USA	Mali	4	W
2013–2014		No records of trade			
Total				834	

Table 2. Live Spiny-tailed lizard species reported to have been imported for commercial purposes by Malaysia between 1990 and 2014.

¹the reported source of the transaction relates to the original source of the species being traded: W=specimen taken from the wild; C=animals bred in captivity. Source: CITES Trade database

that the main active ingredient in the capsules is spiny-tailed lizard derivative, products observed in trade during this survey did not list it as an ingredient; only plant-based ingredients were listed (Fig. 4). This appears to be a violation of the *Medicines (Sales and Advertisement) Act 1956*. Both authorities have been contacted to alert them to this, and to clarify the registration status of the company and product.

Trade dynamics of spiny-tailed lizard-based products in Malaysia

Products of this company have been promoted as the only medicinal products containing spiny-tailed lizards available in Malaysia and have been marketed openly for over a decade, evolving into a business that could be gaining in popularity, as suggested by the company's frequent participation in trade fairs and the introduction of a new product. The availability of spiny-tailed lizard-based products for sale for more than two decades suggests there is a steady supply and demand. Furthermore, these products are actively promoted at various national trade events such as MAHA and the Malaysian International Halal Showcase, a trade show promoting Halal products and services to international markets.

Online sources promoting the products appear to target a Muslim audience as products are promoted as *halal*, a binding Islamic certification concerning the consumption of certain products/foods according to religious rules.

Dhabsinai capsule products are certified *halal* by the governmental Department of Islamic Development Malaysia (JAKIM). Product brochures also promote spiny-tailed lizards as herbivores and consumption is therefore not prohibited in Islamic scripture; however, it is worth noting that Castilla *et al.* (2011) have presented evidence of scavenging behaviours in Egyptian Spiny-tailed Lizards. It is unclear if this new finding will affect the *halal* status of spiny-tailed lizards; this will require further investigation.

Conservation concern

Overhunting of spiny-tailed lizard species has been reported as a threat to their survival in range countries, including Egypt, India and Pakistan (Wilms *et al.*, 2012; Rasheed, 2013; Conservation India, 2014); locals in Saudi Arabia have reported dwindling numbers of spiny-tailed lizards as a result of overhunting (Reuters, 2013), and in some regions the species can no longer be found (Habib, 2014). Often, this animal is sold in local markets in large numbers (Abdulaziz *et al.*, 2001). One of the species claimed to be used in medicines in Peninsular Malaysia—the Egyptian Spiny-tailed Lizard—is already listed as Vulnerable by IUCN, with a decreasing population trend and trade cited as a conservation threat (IUCN, 2015). More consistent monitoring is required to understand the prevalence of trade in Malaysia or other countries, and the impact on wild populations.

CONCLUSIONS

Traditional medicine products reportedly containing spiny-tailed lizard parts and derivatives are being traded in Malaysia. Due to apparent discrepancies uncovered during this study, there are concerns that some of this trade may be taking place without proper import documentation. Furthermore, registered products observed do not include spiny-tailed lizards and derivatives on the ingredients list despite their being advertised as the main active ingredient. This omission contravenes Malaysian legislation governing the sale and advertising of medicines.

TRAFFIC is working with DWNP and NPCB to verify the trade of spiny-tailed lizard products, and to recommend follow-up regulatory actions where required. Further monitoring and comprehensive investigation into the trade of this genus in Malaysia is recommended. As this emerging trade could potentially be a threat to wild spiny-tailed lizard populations, it is also recommended that range countries from which the animals are exported monitor wild populations and regulate hunting and export.

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