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Medicinal use of *Gekko gecko* (Squamata: Gekkonidae) has an impact on agamid lizards

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The use of lizards for medicinal purposes is a well-known phenomenon and dates back at least to the 10th century (LEV 2003). Especially in Southeast Asia, the tokay gecko, *Gekko gecko* (LINNAEUS, 1758), is believed to treat AIDS, cancer, asthma, tuberculosis and impotence (ANONYMOUS 2011), and these animals are sold as dried specimens or preserved in alcohol. The same Southeast Asian markets also offer various species of Agamid lizards of the subfamily Draconinae preserved in alcohol as “lizard wine” or “lizard whiskey” and these are claimed to increase strength and energy; the latter products are even exported to Europe (WAGNER, unpubl. data). Spiny-tailed agamas of the subfamily Uromastycinae, like, e.g., *Uromastyx aegyptia* (FORSSKÅL, 1775) in Saudi Arabia or *Saara hardwickii* (GRAY, 1827) in India, are not only hunted for meat, but also for medicinal use, as fat extracts from their tails are believed to have an aphrodisiacal property. These species, as well as some monitor lizards, have in common that their populations decline because of this specific hunting for medicinal uses (SUBRAMANEAN & VIKRAM REDDY 2012). Especially in the tokay gecko, the situation seems to be dramatic because of the high numbers of traded specimens. The known import quantity of tokay geckos to the USA between 1998 and 2002 was more than eight and a half tons for traditional medicinal purposes (SCHLAEPFER et al. 2005). Moreover, an estimated 1.2 million dried specimens are exported annually from Java (NIJMAN et al. 2012), which is much higher than the national quota of 50,000 specimens. At a price of \$1 per gecko specimen, the export values for Java exceed one million US Dollars per year. This will not only result in high numbers of smuggled specimens, but also in an increase of the price, as the populations are dwindling and tokay geckos become less easily

available as in the past. Moreover, the Chinese economy is becoming very active, and workers are sent out to many African and Asian countries to, e.g., build roads, railway tracks etc. Therefore, the export of dried lizards, especially geckos, to these countries is bound to increase as well.

So far, only few information of medicinal use or trade is known to exist in lizards of the subfamily Agaminae (BAUER 2009), even though it ranges from Africa all the way to central and eastern Asia. SODEINDE & SOEWU (1999) reported the use of “*Agama agama* [= *Agama picticauda* fide LEACHÉ et al. 2014]” from Nigeria, while ZHU & REN (1999) mentioned that *Paralaudakia himalayana* was sold as “*Gekko gecko*” on Chinese markets. A photo taken on a bazaar in Kabul, Afghanistan, in January 2003 (Fig. 1) shows a Chinese medicinal market stall, an assumption that is supported by the use of Chinese characters on the labels. This stall offers, e.g., ganoderma fungi against cancer as well as a large number of dried agamid lizards that are sold, as indicated by the Chinese label, as “geckos” [“蛤蜊”]. Moreover, these specimens were killed, disemboweled, stretched and dried and therefore, offered in the same manner as tokay geckos are commonly presented on markets in SE Asia.

The correct identification of the lizards is difficult, as no specimens were bought at the time. Comparing the colour pattern of the traded specimens to species occurring in Afghanistan, the specimens shown in the photo are now identified as *Paralaudakia caucasia* (EICHWALD, 1831). This species ranks amongst the most common lizards in the country and well known from several localities around Kabul (WAGNER et al., unpubl. data). However, as not all specimens are well visible in the photo, it cannot be excluded that also other *Paralaudakia* BAIG, WAGNER, ANANJEVA &



Figure 1. *Paralaudakia causasia* offered as “gecko” on Chinese medical market at the bazaar in Kabul, Afghanistan in January 2003.

BÖHME, 2012 as well as *Laudakia* GRAY, 1845 species might be traded.

From the given scenario, we assume that (1) these lizards are not part of traditional Afghan medicine, and (2) as they are sold as “geckos”, they are supposed to replace the tokay gecko, which does not occur in Afghanistan and is probably difficult to import into the country. Therefore, the medicinal use of this gecko has an indirect impact on agamid lizards, as these are sold as “fake-geckos” in countries where it is impossible to collect or import tokay geckos to satisfy consumers’ demands because of their supposed medicinal effects. NIJMAN et al. (2012) and SUBRAMANEAN & VIKRAM REDDY (2012) pointed out that because of the collecting for medicinal use, the tokay has already become an endangered species. Therefore, this problem could also negatively impact those species that are now used instead of the gecko, and further research on this subject is urgently needed to study this impact in more detail in both Asia and Africa.

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