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Ethnopharmacological uses of amphibians and reptiles in district Bahawalpur, Pakistan

Hafiza Ammatussalm[1*]

1. Department of Zoology, The Islamia University of Bahawalpur, Pakistan

***Corresponding author e-mail:** ussalamamat@gmail.com

SUMMARY

Data were collected from January 2021 to July 2021. For the statistical analysis, relative frequency of citation (RFC) was calculated with the help of MS word. The highest RFC was calculated for slender worm snake, house lizard and Indian flapshell turtle. *Fejervarya limnocharis, hoplobatrachus tigerinus, Geolemys hamiltonii, Chitra indica, Aspideretes gangeticus, Calotes versicolor, Laudakia melanura, Crossobamon orientalis, Uromastyx hardwickii, Varanus bengalensis, Typhlops ductuliformes, Eryx johnii, Eryx conicus conicus, Argyrogena fasciolata, Amphiesma stolatum, Lycodon aulicus aulicus, Oligodon arnensis, Platyceps ventromaculatus, Spalerosophis diadema, Naja naja, Hemidactylus frenatus, Bufo bufo* and *Lissemys punctata andersoni* used to treat various diseases like Joint pain, Joint pain, Antivenom, antibacterial, backbone pain, medicinal combs, Lung muscles, Skin diseases, Sores, eye infection, Reduce pain, Skin infection, Muscle relaxants, antivenom, Joint pain, Joint pain, antibacterial and Antibactaria.

Keywords: Herptiles, Wildlife, Ethnozoology, Ethnopharmacology, Snake

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INTRODUCTION

Pakistan is a major geographical location. Pakistan covers an area of 796,095 km^2 and is divided into three primary zoogeographical regions: the first Palearctic, the second Oriental, and the third Ethiopian. Its southwestern border is connected to the Arabian Sea, while its northernmost tip is located in the stable snow scenery of Pamir in the vast Himalayan region (Khan, 2006). In the world, more than 10,000 species of reptiles are reported (Uetz, 2016); while round about 8000 amphibian species are documented (AmphibiaWeb, 2018). Pakistan has almost 200 species of reptiles (Khan, 2006). and more than 20 species are documented by Khan (2010).

Animals' parts are used in folk medicine (Mughal *et al.*, 2020; Svanberg and Locker, 2020; Prakash and Verma, 2021; Rahman *et al.*, 2022). Some nomadic snake attracter tribes are actively contributing to the extinction of reptile species. They make deals with wild animals, reptiles, and other creatures. They are often called as "sanyasies" and "Tapri-was," and they have posed a danger to

the indigenous reptile population throughout Pakistan. They relentlessly hunt various reptile species attracted by high prices. While herptiles are in great demand in general marketplaces, and folklores healers (or Daisi Hakeem) use them in research to cure a variety of general disorders (Khan, 2006; BRG, 2016; Ferreira *et al.*, 2016).

Reptiles and amphibians are important bio-indicators (Fontenot, 1995; Burger, 2006a, b; Holt and Miller, 2011). Except for a few remote islands, they are widespread in a wide range of environments and indicate climate change. Their richness and variety are tied to several bird and mammalian species. Some nomadic snake attracter tribes are actively contributing in the annihilation of reptile species. They make deals with wild creatures. Known as "sanyasies," "gagras," and "Tapri-was," they have posed a threat to Pakistan's native reptile population (Khan, 2006). *Ptyas Muscocus, Python molurus, Spalerosophis diadema, Trapelus agilis, Uromastyx asmusii, U. hardwickii, Varanus bengalensis* and *V. griseus,* among others, are constantly hunted. Illegal trade and ethnopharmacological uses of herptiles are common in Pakistan (Khan, 2006; Khan *et al.*, 2020). The project's goals are to analyze the variety of herpetofauna and human-herpetofauna interactions in the study region.

MATERIALS AND METHODS

STUDY AREA

Bahawalpur is a Pakistani city in the province of Punjab. According to the 2017 census and the 11th most populous city in Pakistan with a population of 762,111 people. Bahawalpur, founded in 1748, was the capital of the ancient princely state of Bahawalpur, which was controlled by the “Abbasi” until 1955 (Figure 1).

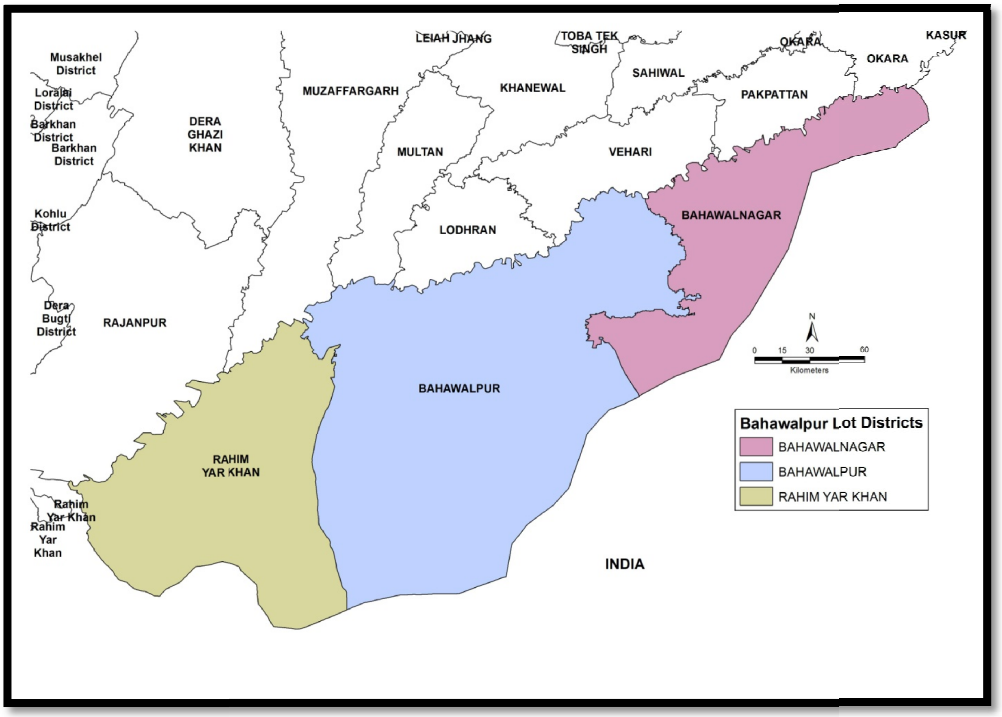

Figure 1: Map of the study area.

METHODOLOGY

Data were collected from January 2021 to July 2021 as collected by Altaf (2016).

STATISTICAL ANALYSIS

For the statistical analysis, we calculated "frequency of citation" (Altaf *et al.*, 2017; Umair *et al.*, 2017; Bashir *et al.*, 2018; Farooq *et al.*, 2019; Umair *et al.*, 2019; Amjad *et al.*, 2020; Faiz *et al.*, 2022; Rahman *et al.*, 2022) and "relative frequency of citation" with the help of MS word (Altaf, 2016; Altaf *et al.*, 2018; Altaf *et al.*, 2020).

RESULTS AND DISCUSSION

Data collected from male (47) and female (3) respondents. Most of the respondents are educated and The Muslims while other few are uneducated and non Muslims. The peoples of the study area having from different ages as mention in Figure 2.

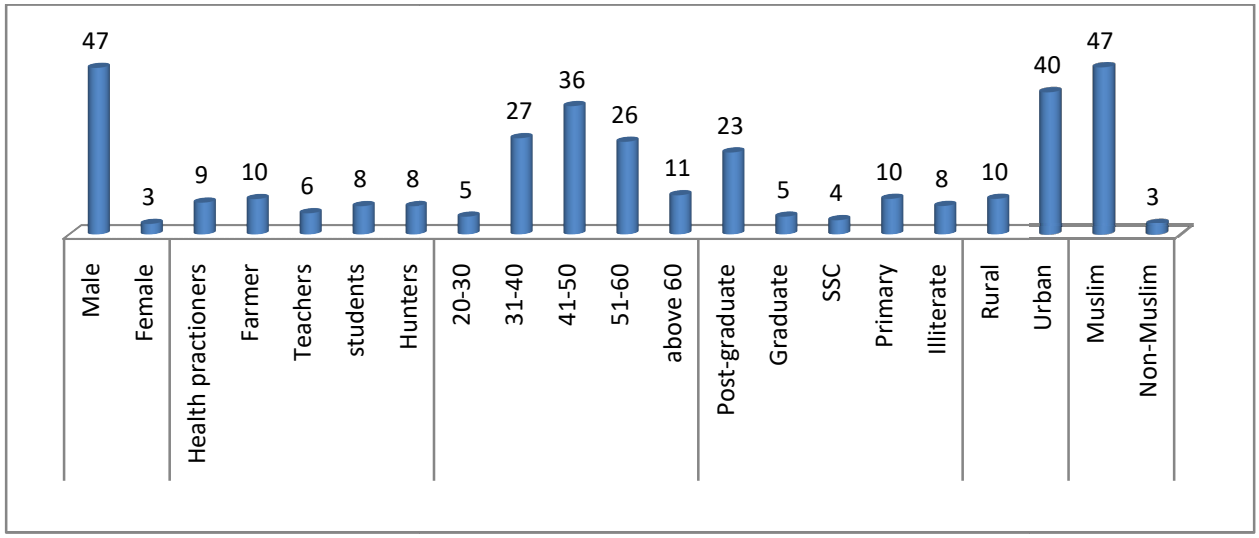

Figure 2: Respondents profile.

During study noted that fat of *Fejervarya limnocharisis* used to treat joint pain and RFC is 4.8. During study noted that fat of *Hoplobatrachus tigerinus* is used to treat joint pain and RFC is 6.0. During study noted that fat of *Geolemys hamiltonii* is used to treat antivenom and RFC is 1.2. During study noted that carapace of *Chitra indica* is used to treat antibacteria and RFC is 1.8. During study noted that skin, venom of *Aspideretes gangeticus* is used to treat joint pain or antivenom and RFC is 2.4. During study noted that body of *Calotes versicolor* is used to treat joint pain and RFC is 6.0. uring study noted that body of *Laudakia melanura* is used to treat joint pain and RFC is 4.2. During study noted that body of Crossobamonorientalis is used to treat medicinal combs and RFC is 5.4. During study noted that fat of *Uromastyx hardwickii* is used to treat joint pain and RFC is 1.2. During study noted that meat of *Varanus bengalensis* is used to treat Lung Muscle and RFC is 6.6. During study noted that venom of *Typhlops ductuliformes*

is used to treat antivenom and RFC is 9.0. During study noted that shell, fat of *Eryx johnii* is used to treat medicine, oil and RFC is 6.0. During study noted that fat of *Eryx conicusconicus* is used to treat control of worm, oil and RFC is 5.4. During study noted that skin of *Argyrogena fasciolata* is used to treat control of sores, eye infection and RFC is 1.2.

During study noted that fat of *Amphiesma stolatum* is used to treat control of biological control and RFC is 3.6. During study noted that fat, venom of *Lycodon aulicusaulicus* is used to treat control of skin, antivenom and RFC is 4.2. During study noted that skin of *Oligodon arnensis* is used to treat control of reduces pain and RFC is 2.4. During study noted that skin of *Platyceps ventromaculatus* is used to treat control of sores and RFC is 1.8. During study noted that venom of *Spalerrosophis diadema* is used to treat control of Muscle relaxants and RFC is 1.2. During study noted that skin, venom of *Naja naja* is used to treat control of oil, antivenom and RFC is 6.6. During study noted that fat of *Hemidactylus frenatus* is used to treat control of joint pain and RFC is 9.0. During study noted that fat, skin of *Bufo bufo* is used to treat control of joint pain, antibacterial and RFC is 9.0. During study noted that Carapace of *Lissemys punctate andersoniis* used to treat control of antibacterial and RFC is 0.6 (Table 1).

It is also reported that herptile fat is used to cure snake bites and itching, but older records suggest that the residents of the Chenab River utilized fat to treat rheumatic pains, skin infections, bodily swellings, burning sensations, and as a sex booster. The presence of "omega-3 fatty acids" in fat that reduces redness may be used to treat human ailments. It should be emphasized that several medicinal reptile species are hunted for food and provide significant protein sources for residents of urban and rural regions where they are commonly marketed. Other research has also shown that animal species may be used as food or medication (Altaf *et al.*, 2020).

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Table 1: Ethnomedicinal uses of amphibian and reptiles of Bahawalpur, Pakistan

Sr.	Common name	Scientific name	Local name	Part used	Mode of use	Disease cure	Frequency of Citation (FC)	Relative Frequency of Citation (RFC)
1	Wart frog	*Fejervarya limnocharis*	dadu	Fat	Topical	Joint pain	8	4.8
2	Indus valley bullfrog	*hoplobatrachus tigerinus*	mendak	Fat	Topical	Joint pain	10	6.0
3	Black pond turtle	*Geolemys hamiltonii*	kachwa	Fat	Topical	Antivenom	2	1.2
4	Indian narrow headed Softshell Turtle	*Chitra indica*	kacho koman	Carapace	Topical	antibactaria	3	1.8
5	Indian Softshell Turtle	*Aspideretes gangeticus*	bara kacho	Skin, venom	Topical	Joint pain, backbone pain	4	2.4
6	Estern Garden lizard	*Calotes versicolor*	baghi chipkali	Body	Topical	Joint pain	10	6.0
7	Black agama	*Laudakia melanura*	kirli	Body	Topical	Joint pain	7	4.2
8	Sindgecko	*Crossobamon orientalis*	lalkirli	Body	Topical	medicinal combs	9	5.4
9	Indian spiny-tailed lizard	*Uromastyx hardwickii*	sanda	Fat	Topical	Joint pain	2	1.2
10	Bengal monitor	*Varanus bengalensis*	goo	Meat	Topical	Lung muscles	11	6.6
11	Slender worm snake	*Typhlops ductuliformes*	dhaga sanp	Venom	Topical	Skin diseases	15	9.0
12	Indian sand boa	*Eryx johnii*	domoei	Shell, fat	Topical	Joint pain	10	6.0
13	Rough-scaled sand boa	*eryx conicus conicus*	kalanag	Fat	Topical	Joint pain	9	5.4
14	Banded racer	*Argyrogena fasciolata*	nag	Skin	Topical	Sores, eye infection	2	1.2
15	Buff striped keelback	*Amphiesma stolatum*	sap	Fat	Topical	Joint pain	6	3.6

16	Indian wolf snake	*Lycodon aulicus aulicus*	sanchowa	Fat, venom	Topical	Skin infection	7	4.2
17	Kukri snake	*Oligodon arnensis*	sanp	Skin	Topical	Reduce pain	4	2.4
18	Glossy-bellied racer	*Platyceps ventromaculatus*	sanp	Skin	Topical	Skin infection	3	1.8
19	Diadem snake	*Spalerosophis diadema*	gadranag	Venom	Topical	Muscle relaxants	2	1.2
20	Indian cobra	*Naja naja*	kalanag	Skin, venom	Topical	Oil, antivenom	11	6.6
23	House lizard	*Hemidactylus frenatus*	chipkali	Fat	Topical	Joint pain	15	9.0
24	Toad	*Bufo bufo*	mendak	Fat, skin	Topical	Joint pain, antibacterial	15	9.0
25	Indian flapshell turtle	*Lissemys punctata andersoni*	Hara kachwa	Carapace	Topical	Antibactaria	1	0.6
Total								100.0

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Authors' contributions: Ammatussalm has designed this project, collected data and written this article.