



Review

The scorpion in Spanish folk medicine: A review of traditional remedies for stings and its use as a therapeutic resource

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ABSTRACT

Ethnopharmacological relevance: While scorpionism is not a serious public health problem in Spain, traditional Spanish knowledge has retained a large number of plant-based and animal-based remedies for scorpion stings. Additionally, this arthropod plays an important role in the treatment of its own sting and has become a significant therapeutic resource in the treatment of several human pathologies. These remedies are distributed across a large number of references.

Materials and methods: A thorough review of Spanish literature has been conducted in the fields of folklore, ethnography, ethnomedicine, ethnobotany, ethnozoology, social anthropology and medical anthropology from the early twentieth century to the present. Automated searches in national and international databases have been performed.

Results: The results include more than 110 traditional remedies for scorpion stings. Forty-eight remedies are based on the use of 29 vascular plants in 19 different botanical families. This listing of useful plants is broader than that provided by other researchers studying neighboring areas. Seventeen remedies based on the use of nine animal species, including humans, are also reported. Remedies have also been documented involving mud and water, while other remedies indicate the use of scorpions (crushed and applied directly). Many remedies emphasize the topical use of “scorpion oil” (i.e., oil from fried scorpions). Two remedies are based on the maceration of scorpions in alcohol. In most cases, topical remedies are applied locally on the affected area. There is also some use of magical remedies as well. The scorpion has also been used as a major component in 22 Spanish remedies and healing rituals associated with 17 human pathologies.

Conclusions: The present study demonstrates the importance of the scorpion in Spanish folk medicine. In general, the remedies evaluated mix magic and empiricism. The data we obtained may represent relevant background knowledge for studies aimed at developing and applying new therapeutic remedies for scorpion stings and other human pathologies. The data also invites further research to determine the validity of these folk remedies.

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1. Introduction

Scorpionism, understood as a medical condition characterized by intoxication or poisoning from a scorpion sting, is a major problem in some areas of the planet (e.g., north-Saharan Africa, Sahelian Africa, South Africa, Near and Middle-East, South India, Mexico and South Latin America, and east of the Andes (Chippaux and Goyffon, 2008)). Scorpion stings cause thousands of deaths per year and cause serious public health problems in these regions, with increased morbidity and mortality (e.g., Ozkan et al., 2008; Albuquerque et al., 2009; Lagunas-Flores and Lagunas-Jaimes, 2009). Although the high incidence and/or severity of scorpionism cases that originate in these locations cannot be extrapolated to Spain and other southern European countries, the condition is not rare.

Overall, international epidemiological studies indicate that the severity of a scorpion sting depends on factors such as the species and size of the scorpion, the amount of venom injected, the body mass of the injured person and the patient's sensitivity to the venom (Monzón Muñoz and Blasco Gil, 1997c; Pastrana et al., 2003; Mullen and Stockwell, 2009). In Spain, scorpion sting poisonings are rarely analyzed in the medical literature. In most reported cases, the sting took place during the summer, often in the middle of the day while the victim was performing work in fields. The stings occur mostly in the lower extremities (see González, 1982; Casal and Luque, 1985; Monzón Muñoz and Blasco Gil, 1989; Gómez et al., 1990).

According to Fet (2010), the following scorpion species exist on the Spanish mainland: *Buthus occitanus* (Amoreux, 1789), *Buthus ibericus* Lourenço and Vachon, 2004, *Buthus montanus* Lourenço and Vachon, 2004 –Buthidae–, *Euscorpis flavicaudis* (DeGeer, 1778) –Euscorpidae– and *Belisarius xambeui* Simon, 1879 –Chactidae–. Additionally, Victor Fet cites the presence of an exotic buthid species, *Isometrus maculatus* (DeGeer, 1778), a subcosmopolitan scorpion that has been introduced across the globe. This species was once reported in Spain (in the coastal area surrounding the city of Huelva), but no resident population has been confirmed. Traditionally, the only species considered a cause of envenomations has been *Buthus occitanus*, which is “widely distributed in the Iberian Peninsula”. The results of studies assessing the genetic diversity in buthid specimens in the Iberian Peninsula (using mitochondrial DNA techniques) have shown that *Buthus ibericus* is the most widely distributed species and is especially abundant in the western part of the peninsula (see Sousa et al., 2010).

Leaving aside the taxonomic and/or biogeographical debates, the sting of scorpions in the genus *Buthus* (very painful) is not usually fatal but can be dangerous in children under five, the elderly and people with allergies (Monzón Muñoz and Blasco Gil, 1989; Fernández-Rubio et al., 2008). The symptoms presented in documented cases in Spain include an intense local pain of a burning type, which, if left untreated, can last up to 72 h. The affected area shows hyperthermia and an erythematous macula of 3–10 mm with the stigma of the sting in the center. Edema and loco-regional progressive pain may occur. General symptoms usually start 1–60 min after the poisoning. Mild medical profiles involving local symptoms and anxiety are most frequent. Severe medical profiles involving cardiovascular failure, respiratory

failure, seizures or anaphylactic shock are exceptional (Monzón Muñoz and Blasco Gil, 1997c; Pastrana et al., 2003; Fernández-Rubio et al., 2008).

According to the official Emergency protocols (e.g., Jiménez Murillo and Montero Pérez, 2009; Barcones Minguela, 2010; García Redecillas et al., 2010), the recommended treatment for scorpion envenomations occurring in Spain, which must be addressed as a matter of medical urgency, is the following: cleaning and disinfection of the injured area, local application of cold (ice), elevation and rest of the limb, injection of a local anesthetic (not epinephrine), the use of physical measures in cases of edema and the administration of oral analgesia and tetanus prophylaxis. Intravenous antihistamine drugs may contribute to treatment because of their sedative effect (García Redecillas et al., 2010). In case of convulsions, life support measures are used, such as sedation with Diazepam or Phenobarbital (Barcones Minguela, 2010). However, a scorpion anti-venom serum administration is not recommended (Pastrana et al., 2003; Barcones Minguela, 2010).

Although everything mentioned above indicates to a mild level of danger, a certain degree of risk related to scorpions does exist. Curiously, we note that in the province of Badajoz, in the recent past, scorpions were often killed, dried and smoked (Blanco Castro and Cuadrado Prieto, 2000), but in popular Spanish proverbs and folk traditions, the scorpion sting is frequently seen as inevitable and fatal. Numerous and quite remarkable are the sayings relating to its “fatal sting”, for example: *Si te pica un alacrán, no comerás más pan* (lit.: “If a scorpion stings you, you shall not eat more bread”); *Si te pica un escorpión, coge la pala y el azadón* (lit.: “If a scorpion stings you, take the shovel and hoe”); *Si te pica un alacrán, llama al cura y al sacristán* (lit.: “If a scorpion stings you, call the priest and the sacristan”) (see Vázquez Gallego, 1990; Monzón Muñoz and Blasco Gil, 1996b; Rubio Marcos et al., 2007).

In Spanish folk medicine, the use of traditional remedies to treat, or at least alleviate, scorpion stings is very common. These remedies are scattered among numerous publications of different types. Additionally, the scorpion appears as a therapeutic resource in many medical remedies. Thus, the aims of this paper were as follows: (i) to document and analyze remedies traditionally used in Spain to prevent and treat scorpion stings, including those based on plants and fauna, including the scorpion itself, and those based on the use of water, minerals or amulets of various types; (ii) to document the folk remedies for various diseases centered on the use of the scorpion, and (iii) to contribute to the dissemination of these results within the scientific community to open a door to research in other disciplines.

2. Materials and methods

2.1. Data-collection procedures

A thorough review of the Spanish literature spanning from the early twentieth century to the present was conducted. To study documentary sources, a comprehensive search of international, national and local automated databases was carried out. We used databases including the ISI Web of Science, Anthropology Plus, JSTOR III – Arts & Sciences, the database of Doctoral Theses TESEO, the databases of the information system of Consejo Superior de Investigaciones

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