



## **The therapeutic use of the chile bolden (*Peumus boldus m.*) in the treatment of hepatic disorders**

### **O uso terapêutico do boldo-do-chile (*Peumus boldus m.*), no tratamento de distúrbios hepáticos**

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#### **1 INTRODUCTION**

The use of plant species in the treatment of diseases is one of the oldest practices of human civilization (AL MANSOUR, 2015; RIBEIRO, 2018; SANTOS *et al.*, 2019). The interaction between man and plants is strongly evidenced, since there are several uses of plant resources, both for food and for medicinal purposes (GIRALDI; HANAZAKI, 2010; ZARDO *et al.*, 2016).

Research on medicinal plants has made significant progress, and this is coupled with the fact that the defense and enhancement of countries' biodiversity is on the agenda of discussions and public policies for the conservation of flora and fauna worldwide. Traditional knowledge has been recognized by the WHO. In Brazil, this recognition was motivated by several social contingencies that are imposed, such as: the unequal primary health care of certain regions and populations existing in different geographical areas of the country, in addition to the easy access to medicinal plants by the poorest population and traditional communities, who resort to them as therapeutic resources as a main



alternative to the difficult access to public health services. In addition, traditional phytotherapy has been occupying spaces in public health therapeutic practices due to the inability and insufficiency of the official medical system to cover the entire population.

In this sense, it is observed how much there is a need for more studies in this field due to the large numbers of species used in the treatment of diseases by traditional populations.

## **2 OBJECTIVE**

To analyze the traditional therapeutic uses of the plant *Peumus Boldus* (M.), popularly known as "Boldo-do-Chile", in the treatment of liver diseases.

## **3 METHODOLOGY**

For the realization of this study, a bibliographic review was carried out related to the species *Peumus Boldus* Molina. To address this issue, publications in specialized bibliographies were selected. The following keywords were used to perform the searches: medicinal plants, toxicity, *Peumus Boldus* Molina and Traditional Phytotherapy.

## **4 DEVELOPMENT**

*Peumus boldus* is a tree plant species native to Chile and belonging to the "Monimiaceae" family. It is popularly called simply boldo, and is one of the most widely used herbal medicines in the treatment of problems related to the digestive system (RUIZ *et al.*, 2008). Its main chemical property in teas is boldine alkaloid, which is described in Brazilian pharmacopoeias, in Chile and in Europe, besides being widely used in homeopathic medicine as an ideal active principle for the treatment of liver disorders (RUIZ *et al.*, 2008).

It is common in Brazil to find "boldo" in supermarkets, small businesses and even in establishments specializing in natural products the indiscriminate sale of Boldo leaves for teas, where there is no reference as to which species of "boldo" is offered to consumers, contrary to ANVISA standards, which establish the standardization of packaging. (BRASIL, 2009).

Pharmacological studies indicate that the essential oil of boldo leaves has antibacterial activity against *Streptococcus pyogenes*, *Micrococcus sp.*, *Staphylococcus aureus*, *Bacillus subtilis* and antifungal against several *Candida* species (VIEIRA *et al.*, 2021). This species also has an excellent antioxidant capacity due to the ability to



sequester hydroxyl and peroxy radicals (VIEIRA *et al.*, 2021). It also has the ability to attenuate the development of diabetes and tumors in experimental studies (Ruiz *et al.*, 2008). In human blood samples, boldo has been shown to inhibit platelet aggregation. Studies have also proven that it performs anti-inflammatory and neuromuscular junction blocking activity (RUIZ *et al.*, 2008).

However, *Peumus boldus* in tea form should be consumed with caution and moderation, especially in the case of pregnant women, because its use can trigger teratogenic risks, as attested by Almeida *et al.* in experiments carried out on rats (ALMEIDA *et al.*, 2000). Studies indicate a risk of allergic dermatitis, hepatotoxicity, increased anticoagulant effect in patients using warfarin peroxy (VIEIRA *et al.*, 2021). According to Vieira (2021), there is only one proven case of anaphylaxis with the consumption of boldo tea.

The study carried out by Almeida *et al.* (2000) evaluated the toxicology of the hydroethanolic extract of the leaves of *Peumus boldus* in pregnant rats (800 mg/kg, oral, single dose) and teratogenic and abortive effects were evidenced. Vieira *et al.* (2021), point out that in this same study, carried out with male rats treated orally with the crude extract of boldo, for 90 days, from the thirtieth day they already showed a considerable increase in cholesterol and transaminases and a reduction in the levels of total bilirubin, glucose and urea (ALMEIDA *et al.*, 2000).

The scientific literature also points out that the species *Peumus boldus* M., because it has alkaloids in its structure, is contraindicated for children under 6 years of age. A research detected that "the essential oil at a dose of 0.07g/k, produces convulsions in guinea pigs, thus not being indicated in people with a history of convulsions, especially children" (VIEIRA *et al.*, 2021 *apud* TORRES *et al.*, 2005).

Finally, it is important to emphasize that there are still many medicinal plants that do not have sufficiently satisfactory data to attest to their safety, and their use may cause impacts on the health of those who are consuming a certain species (ALCANTARA *et al.*, 2015). It is in this context that toxicology comes to evaluate and measure the harmful side effects of chemical substances on the living organism, in order to analyze the negative response of substances at the biochemical, cellular and molecular levels, and determine the level of risk of human consumption in relation to various products, establishing parameters of the necessary and safe conditions of exposure to the agents arranged.



## 5 FINAL CONSIDERATIONS

The species *Peumus Boldus* Molina, traditionally known as Boldo-do-Chile, is a species scientifically proven to treat liver disorders and cholelithiasis, as well as having diuretic and anti-inflammatory properties.

Studies with *Peumus Boldus M.* have shown the presence of alkaloids that may pose serious health risks to consumers under 6 years of age. Among the therapeutic benefits, the essential oil of boldo leaves has antibacterial and antifungal activity, but its indiscriminate consumption induces teratogenic and abortifacient effects, as emphasized by experiments on rats. In addition, this species is often confused or replaced by other species of the boldo genus when it is marketed, causing intoxication in its consumers.

Thus, this study shows that a large part of the Brazilian population uses this herbal species without proper knowledge of its complications and its proper use. Also this research serves as support for future studies related to this species and its use in traditional herbal medicine.



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