

## THE USE OF SPECIES PRESENTED AS BOLDO IN SÃO JOSÉ DO RIO PRETO AREA - SÃO PAULO STATE - BRAZIL

GL. Alves<sup>1</sup>, FL. Bachiéga<sup>1</sup> and EES. Camargo<sup>2\*</sup>

<sup>1</sup>Centro Universitário do Norte Paulista, Departamento de Farmácia, Iniciação Científica - Rua Ipiranga 3460, Jd. Alto Rio Preto, 15020-040. São José do Rio Preto - São Paulo, Brasil.

<sup>2</sup>Laquanaturis, cursos profissionalizantes Ltda.-Rua Capitão José Verdi, 244, Boa Vista, 15025-530. São José do Rio Preto, São Paulo, Brasil.

### ABSTRACT

This study presents the knowledge about the utilization of *Vernonia condensata*, *Plectranthus barbatus* e *Peumus boldus*, species which is popular in Brazil, however has a short clarification about the content and goals. We still did a direct observation and identification of the boldo sheets by the participants of the survey. The real boldo (*Peumus boldus*) that has the better benefits had 26% score in the survey when was asked about the identification of the species and the other species (*Vernonia condensata* e *Plectranthus barbatus*) had 74% score, in other words, boldo is used in form of infusion and most of the time the crop is done at home, but most of people are unaware of its effects take to relieve some discomfort and end up causing other serious problems to the body. The result of the research showed that knowledge of the use of boldo as phytotherapeutic, in digestive and hepatic disorders and it needs to increase awareness about the risks of self-medication, because they are not free from side effects.

**Keywords:** Phytotherapeutic; *Vernonia condensata*, *Plectranthus barbatus*, e *Peumus boldus*.

### INTRODUCTION

Popular wisdom are the multiple knowledge produced by men and women, which are obtained from the homemade medicine by using plants to obtain medicines or drugs for multiple purposes.

Medicinal plants have been widely used by the world's population, according to the WHO (World Health Organization) 80% of the population has made use of plants or herbs in pursuit of prevention and treatment for relief of a painful or unpleasant symptom of diseases. (BRANDOLT et al., 2007)

The botanical identification is often wrongly classified and ends up endangering the health of the user, such as occurs with the species of boldo, indiscriminately used, and it may contain substances that offer health risk.

In this work, it was proposed the elaboration of a comparative study of popular uses in comparison to the chemical properties, among

the species of *Vernonia condensata*, *Plectranthus barbatus*, *Peumus boldus*, used in the Northwest of the São Paulo State (Brazil). Although these species are highly used by the population, it was verified a misguided identification of the species.

The morphological differences are slight between species, however there are some chemical differences with several side effects and it may be toxic in some cases. Indiscriminate use by the population and the lack of botanical identification and denomination leads to the incorrect use of these species, causing various health problems.

*Peumus boldus* is a plant commonly known as Chile's boldo abundantly native to the region of central and southern of Chile (BARBOSA et al., 2001). The part used are mature leaves, greyish green color, simple, whole, elliptical, rounded base, have aromatic odor, camphoraceous, slightly acrid and bitter taste (BRASIL, 2010).

Alkaloids like boldine are found in *Peumusboldus* leaves as well as (Figure 1) 2,6-dihydroxy-3,5-dimethoxyaporphina, essential oils as ascaridol, eugenol, cineole, terpineol. boldoglucin, peumosid and boldosid were found too. (COSTA, 2002).

This species is indicated in folk medicine for treatment of digestive disorders and has hepatoprotective, diuretic, eupeptic and coleretic action. Pharmacological studies describe the therapeutic action of this species is attributed by the presence of boldine, for protecting the cell membrane of hepatocytes of the liver when exposed to chemical agents (RUIZ et al., 2008). The action of boldine is to increase biliary secretion and also the elimination of urea, while it stimulates digestion. The flavonoids have antioxidant action, i.e. the ability to capture of the hydroxyl and alkoxy radicals. In this context, the essential oils have antibacterial action.

The *Plectranthus barbatus*, known as brazilianboldo, medium-sized herbaceous plant, also known popularly as false boldo, native from India. Its main used part is the leaf that has aromatic features, little branched, are opposite, simple, oval of jagged edges, very bitter taste and it has blue flowers.

In the leaves of *Plectranthus barbatus*, are found the diterpenes as forskolin (Figure 2), barbatusol, epi-desoxicolenol, volatile oils rich in fenchone and guaieno and also barbatol and barbatesina (EMBRAPA, 2006). The main therapeutic action of this plant is related to the presence of forskolin, used for the treatment of glaucoma, cardiopathies, asthma and against some tumors, because it has bronchodilator

action, with positive inotropic and vasodilator activity.

Some species are contraindicated for women who are in the gestational period, this is the main reason, because the fact of owning volatile oils in its composition, it is extremely toxic, and may cause abortion (VENDRUSCOLO et al., 2005)

The *Vernonia condensata*, known as Bahia's boldo (Figure 3), large-sized plant, little branched, native from tropical Africa. It has simple leaves, whole, membranaceous form, bitter taste followed by sweet when chewed, with very small whitish discreet flowers. It is traditionally used as choleric, cholagogue, liver detoxifier, anti-diarrheal, to suppression of intestinal gases, hepatic insufficiency, bladder inflammation, painkiller and appetite stimulant (LORENZI & MATOS, 2002). It features minimal contraindications.

In the genus *Vernonia* are found various chemical components as the flavonoids luteolin and apigenin, carbohydrates "chlorogenic acid", cardiotonics glycosides (vernoina), sesquiterpenics lactones among them scorpioid, scorpioidine and a new guaianolide (RAUH, 2008). In the methanolic extract of the polar plant is found the substance vernonioside (Figure 3). (SIMIONATO & PAREDES, 2010).

Due to the difference of each plant, by their chemical constituents, it should be noted that each plant has different secondary metabolites, mainly those considered markers, which, according to many studies present several therapeutic effects, and in some cases present toxicity. Therefore, the popular use can be characterized as risk when using species without proper botanical identification.

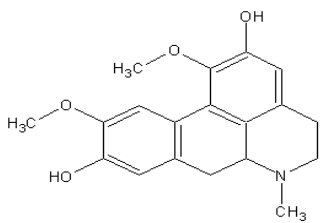


Fig. 1: Boldine

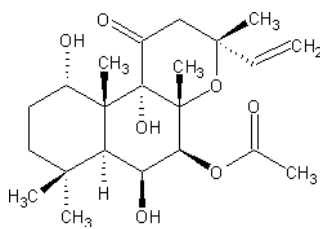


Fig. 2: Forskolin

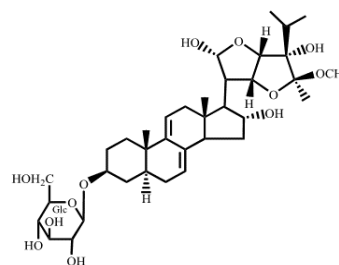


Fig. 3: Vernonioside

## MATERIALS AND METHODS

This study was developed in northwest region of São Paulo State (Palmares Paulista, Monte Aprazível and São José do Rio Preto cities which were classified according to the population density, in small, medium and large) and discussed the therapeutics effect of boldo species. This study was conducted with 200 people of both sexes and various ages and by free and spontaneous way, initially with the identification of the species of boldo examined, being classified as *Vernonia condensata*, *Plectranthus barbatus*, *Peumus boldus*

To obtain the data collection, 200 questionnaires with pictures of each species were analyzed. The body of the information was obtained, as a questionnaire, with 10 closed issues, explaining the form of use, where it is found, intended use and botanical identification. People have had free choice in answering all the questions or not.

The analysis of the data obtained was performed through calculations of frequency of responses obtained from the issues.

## RESULTS AND DISCUSSION

On the use of boldo, it was possible to observe that, of 200 questionnaires, 131 were answered, observing that during the counting and assessing of the responses of the questionnaires that the most way to use boldo was the tea infusion 75% (98 people) reaching a high percentage compared to others, the capsule form was the second chosen with a percentage of 11% (15 people), the other forms as pills 3% (4 people) and tincture 5% (6 people), were not much quoted (Figure 4).

The boldo plant is much more used in the form of tea (infusion) noting that 80% of respondents (105 people), can somehow maintain an own cultivation, one or more species of boldo or find them in houses of natural products, herbalists, supermarkets and food markets, totally unaware of their morphological differences and the dangers which can result with the intake without know its origins, because the authenticity of a plant sample is given by the parameters of botanical identity, such as by the presence of active chemical components and characteristics of each species. (SIMÕES et al., 2001).

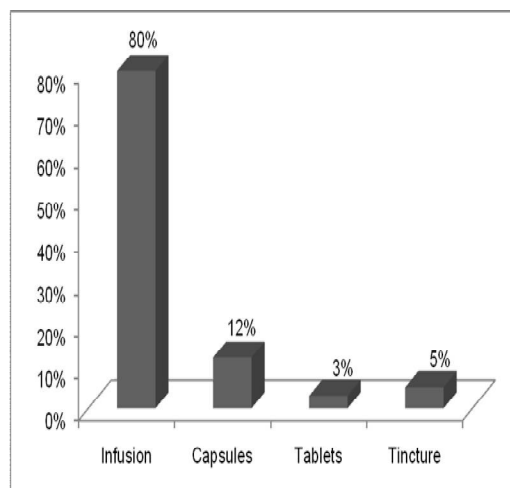


Fig. 4: Uses of boldo

There are lot of ways to find boldo leaves, and 121 people (92%) answered where they find the leaves to prepare an infusion, among them noted that the population has varied habits and the most performed is the cultivation of boldo at home 37% (48 people). Moreover, 35% (46 people) acquires boldo phytotherapeutic formulations in pharmacies, 21% (27 people) replied that they buy the dried leaves in markets and herbalists.

Own cultivation was the most widely used by people because the species of boldo, as *Plectranthus barbatus* and *Vernonia condensata* are the most frequently found in the region, being grown in their own residences, reaching 40% of respondents (52 people). However, the most of these people do not know any kind of problems that these may cause and may suffer severe poisonings and even the abortion in pregnant in the case of *Plectranthus barbatus*. In free markets and natural products houses, 14 respondents (11%) reported finding with great ease and comfort in these locations, however, they agree that the species are sold indiscriminately, without analyzing the species, their morphological differences and their various effects (Figure 5).

So also, 38% of respondents (50 people), responded to seek compounding pharmacies that are qualified to produce capsules of *Peumus boldus*, originally found in powder form, duly established with manufacturer's analysis report, because in most current terms regulated the registration of herbal medicines, in this record there are all information, such as complete botanical nomenclature, part of plant used, patient information leaflets, documentation regarding the place of manufacture, production data, quality control, efficacy and safety in accordance with the

Resolution of Collegiate Board, RDC No. 14 of March 31, 2010, ANVISA (BRASIL, 2010). These people rely on manipulation but unaware of any difference that may exist between the species cited in the present work, becoming difficult the guidelines given for a moderate use of the species to guarantee the efficacy and safety of people.

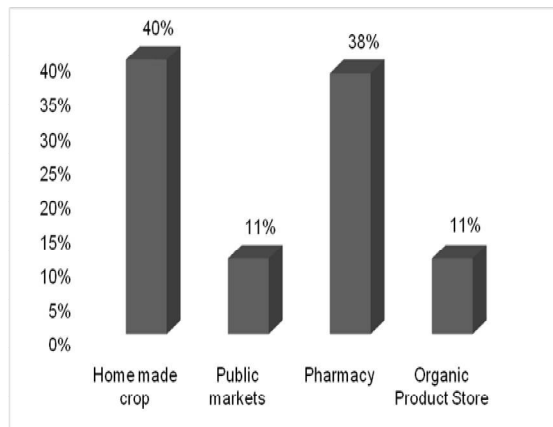


Fig. 5: Where boldo is found

According to the indications of use (Figure 6) 131 people in 200 responded that 46% (60 people) use for liver problems, 41% (53 people) for digestive disorders (stomach), 8% (11 people) uses for migraine and 5% (7 people) against abundant evacuation (diarrhea).

The results indicated that the vast majority of users of herbal remedies, have acquired this knowledge with parents, followed by those who have learned to use them in everyday living with friends or relatives passing from generation to generation, the boldo is widely used. The majority of respondents who use the boldo for liver problems with hepatoprotective action, 46% of respondents (60 people), said using the extract of the leaves, for intense coleretic and colagog activity, showing if effective in acute and chronic hepatitis. Your colagog action is attributed to boldine. The boldine produces a gradual increase in the flow of bile, as well as an increase of total solids in bile excreted.

Stomach pain can be a symptom of various problems such as reflux, gastritis, ulcer, pancreatitis, cholecystitis, stroke and even cancer, therefore the boldo acts as gastric hiposecretor, which entails the reduction of acidity and gastric juice secretion volume, and may be used for the control of gastritis, dyspepsia, heartburn, gastric discomfort, hangovers and how bitter stimulant of digestion and appetite, however, it is not yet known about the active ingredients responsible for this

action, 41% of respondents (53 people) use for stomach problems.

The population also uses the boldo for migraine, 8% of respondents (10 people), use to alleviate or cure this problem, which will cause sharp pains located on the forehead, temples or nape. In many specialized literature, the boldo may be able to decrease inflammation in the intestines, therefore, it is often used to treat symptoms of diarrhea with 5% of the people interviewed (6 people), using the plant for this purpose. Thus it can be said that despite scientific advances, the popular knowledge will last indefinitely, because recent generations, continue using plants with strong popular historic.

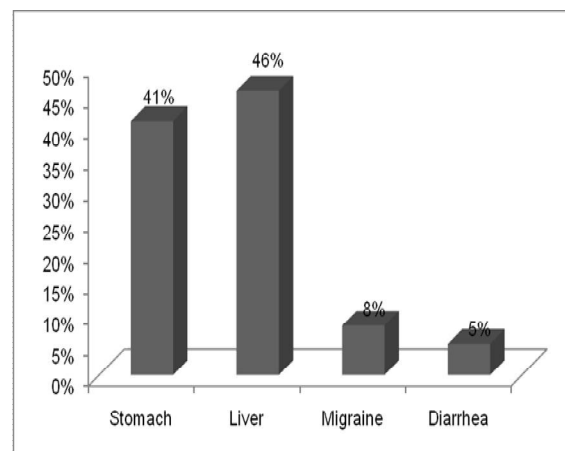


Fig. 6: Indications for use

About the question related to identification of species, 115 (88%) reported being familiar with them and 16 (12%) did not know.

In identifying, considering the images of the species presented together with the questionnaires, of the 200 respondents, 18% (37 people) respondents pointed to *Vernoniacondensata*; 24% (48 people) pointed the *Plectranthusbarbatus*; and 15% (30 people) identified the *Peumusboldus*. It is worth mentioning that, each participant volunteers should point, on the photos, which boldo either knew or used. The third presented species in pictures, the *Peumusboldus*, is little used but is that really has, diuretic and hepatoprotective action for digestive disorders (Figure 7).

It was observed that the in general the population uses various forms of boldo without guidance, being necessary guidelines for the correct and responsible use. With the application of questionnaires, respondents had doubts on the observation of the photos of the leaves of the respective species of boldo, but they distinguish by similarity with the sheet used. However, of the 200 respondents, 84

(42%) claimed to know and have already used the species *Plectranthus barbatus*, for some symptoms of the digestive tract, however, reported unaware about the toxic effects and contraindications for women who are in gestational period, by the fact of owning volatile oils in its composition, it becomes dangerous, and may cause abortion. (VENDRUSCOLO et al. 2005).

Respondents also became familiar with the *Vernonia condensata* popularly known as Bahia's boldo 32% (64 people) have utilized this species, its leaves and flowers are small size of whitish coloration. The extract has low acute toxicity and no evidence of side effects (VICENTE, 2008). According to Formulário de Fitoterápicos da Farmacopeia Brasileira (BRASIL, 2011), this species has minimal contraindications, only must discontinue use if the patient show allergy.

The use of *Peumus boldus* obtained 26% (52 people) by users, this species is known as Chile's boldo. This species is indicated in folk medicine to treat digestive disorders, hepatoprotective, diuretic, eupeptic and coleretic (BARBOSA et al., 2001). So, for the population of respondents, the species of *Peumus boldus* is very unknown, because it is a species not predominant either in this region and in Brazil, therefore, it is more difficult to be found, but its side effects are much smaller than other species of boldo cited.

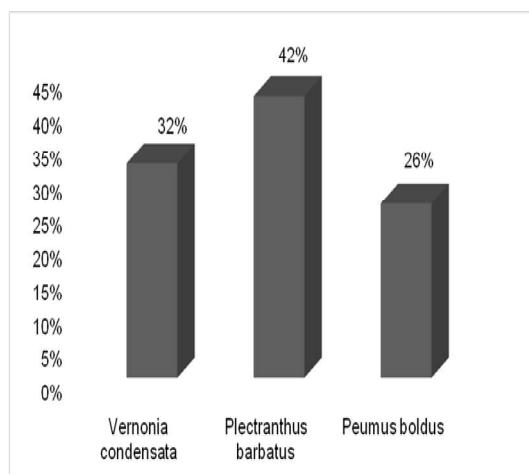


Fig. 7: Identification of boldo species.

## CONCLUSION

The survey realized provided great value information about the popular use of the species studied, although missing elements which prove therapeutic efficacy and toxicity of the medicinal plants, in this work. It is clear that the indiscriminate use of the species, without botanical and pharmacological knowledge,

which may jeopardize the health of the population.

Thus, in this line it is possible to conclude that despite the popular use of medicinal species described in this work, it is necessary to prove the therapeutic efficacy of prevention or cure. Self-medication can mask the symptoms, exacerbating the pathological picture of the disease, as well as to trigger symptoms of toxicity by indiscriminated use. It takes precautions regarding the use of these herbal medicines promoting a greater awareness of the population about the risks that the misuse can cause to the body health.

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