

RESEARCH REGARDING THE CAPITALIZATION OF *IRIS PSEUDACORUS L.* SPECIES

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Abstract

Iris pseudacorus L. (Iridaceae) is a toxic herb with potential therapeutic effects. The species was identified and harvested from the spontaneous flora of Bihor County, then analysed macroscopically and microscopically all the vegetal parts. In the same time we have conducted a study regarding the use of rhizome among the population.

Key words: *Iris pseudacorus L.*, Iridaceae Family, spontaneous flora, popular medicine, Bihor County

INTRODUCTION

Iris pseudacorus L. (tansy, lily pond) belongs to the *Iris* genus, Iridaceae family. Usually it may be found in wet-, swampy soils, so it can be seen around ponds, rivers or lakes. *Iris pseudacorus L.* falls into the category of poisonous plants, due to its high content of glucosides, in all plant parts (Bussuyt B., 2005, Sârbu I., 2013, Tămaș M., 2007, Kaššák P., 2012). According to the database of *Plants for future- Edible, Medicinal and Useful Plants*, *Iris pseudacorus L.* was found to have astringent-, healing-, antimicrobial-, vomit- and emmenagogue properties. The results of some in vitro experiments show that medicinal plants from wet areas may significant effects on antioxidant activity. In Romania, *Iris pseudacorus rhizome* (tansy rhizome) has isolated use in the traditional-, popular-, human- and veterinary medicine.

MATERIAL AND METHODS

The study's aim was to conduct a more deepened study of the *Iris pseudacorus L.* species, as well as the need to identify new natural resources, potencial medicines, which had not been fully investigated. It was identified, harvested and analyzed the *Iris pseudacorus L.* species (lily pond), from the spontaneous flora of Bihor County. There were used harvested plants at flowering, in May 2015.

The macroscopic examination was performed according to FR.X. There were made cross sections using anatomical razor. The sections were

washed with distilled water, then they undergone a clarification process using Javel water. The sections were coloured with Genevez reagent. The preparations were analysed under a binocular microscope type *Optika B350* (Jacobs J., 2010, Gontova T. N., 2013, Temelie M., 2008). There were conducted also a study regarding the use of rhizome (decoction and alcoholic extract) among the population. The questionnaires were filled by the inhabitants of the area, where the species was identified (Gurbediu, Bihor County) (Bonchis I., 2011, Dragoş D. et al., 2002).

RESULTS AND DISCUSSION

Macroscopic characterisation of the vegetal product

The results of the macroscopic analysis, analysed according to FRX, of the vegetal products consisting of: radix, rhizome, herba, folium, flos, fructus are presented in Table 1.

Table. 1

Iris pseudacorus L., the results of macroscopic analysis

Vegetative Organ	Aspect Form	Surface Fracture	Dimensions	Colour	Smell Taste
roots	Branched roots	Uneven, fibrous surface	Short of 7-9 cm	Light brown in the interior and exterior	Smell of mud
rhizome	Large rhizome, dark brown horizontally	Uneven, fibrous surface	Long rhizome 0,5-1m, thickness of 1-3 cm	exterior-dark brown interior-reddish brown	Smell of mud Characteristic taste
aerial stems	Erect, or ascending, cylindrical	Smooth, branched, fibrous fracture	Long up to 150 cm	Dark green	Characteristic smell and taste
leaves	Long, wide, erect, sword-shaped	Smooth edge, with parallel nerved surface	Wide up to 1 cm Long up to 250 cm	Bluish green, dark brown stained tops	
flowers	Hermaphrodite flowers, consisting of periant, androecium and	The surface of those 6 tepals is smooth	7-9 cm width 3 large tepals, towards the exterior, 3	Yellow flowers	Fragrant and aromatic

	gynoecium		smaller erect towards the interior		
fruits	Obtuse, three - edged capsules	Smooth surface, rough when mature	4-8 cm length, contain about 120 seeds	Yellowish -green	characteristic
seeds	Flat seeds	Smooth surface	Thickness of about 5 mm	White, become brown at maturity	characteristic

The anatomical structure of rhizome

In rhizome cross sections of *Iris pseudacorus L.*, there are highlighted several, more or less spherical formations, represented by lipid inclusions and reserve substances.



Fig. 1. Rhizome cross section of *Iris pseudacorus L.* (40x)

Anatomical structure of the stem

In cross section, the stem has a uniform and circular shape. The succession of tissues from the exterior to the interior is: *epidermis*, *hypodermis*, *fundamental parenchyma* and *conducting libero - woody fascicles*. The *Epidermis* is made up of a single layer of cells, closely linked together, with slightly domed and thickened exterior walls with silicon dioxide. Immediately under the epidermis it is located the *hypodermis*, made up of 2-3 layers of cells, with highly lignified walls, which increase the resistance of these stems. The *fundamental parenchyma* is to be found in the interior, being a tissue with thin, cellulosic walls, slightly coloured with Genevez reagent into red. In this parenchyma there are arranged, without any order the *libero-woody fascicles*.

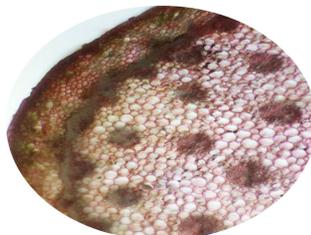


Fig. 2. Stem's cross section of *Iris pseudacorus L.* (10x)

The anatomical structure of leaves

Iris pseudacorus L. presents leaves with ecvifacial structure. In cross section there is highlighted the single layered *epidermis*, with a highly developed cuticule, covered with wax. The *Mesophyll* is made up of a *palisade tissue*, rich in chloroplasts, consisting of 2-3 layers of elongated cells, closely linked together. In the middle part of the limb, there is the lacunar parenchyma, made up of polyhedral cells, less rich in chlorophyll, with intercellular spaces of larger diameter than the surrounding cells, forming some kind of *aerial channels*. Also here we can identify the leading collateral tissue, which presents an arch of sclerenchyma towards the inferior epidermis, made up of 4-5 layers of cells.

The stomata are dumbbell-shaped, arranged face to face, surrounded by four attached cells (tetracytic stomata), two of them smaller, arranged parallel to the ostiole, and two of them larger, perpendicular to it.

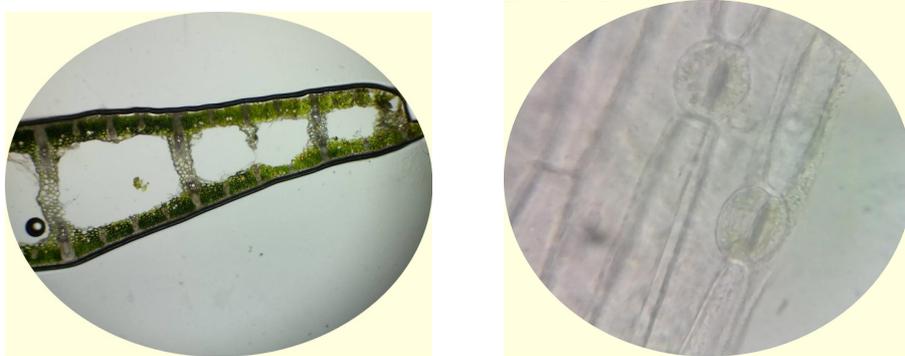


Fig. 3. Leaf's cross section of *Iris pseudacorus L.* (10x). Highlighting stomata in the leaf's epidermis of *Iris pseudacorus L.* (40x)

The anatomical structure of the flower

The flowers of *Iris pseudacorus L.* are actinomorphic, dial-petal, made up of six yellow unequal petals as dimensions and orientation. Tepals present secreting papillae, which confer the velvety appearance, and by the secreting product the characteristic smell.

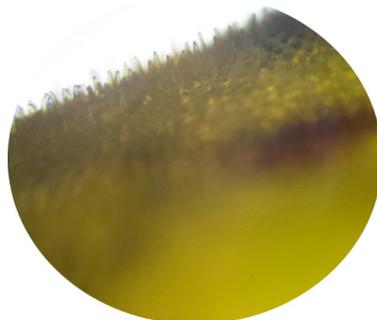


Fig. 4. Cross section in petals of *Iris pseudacorus L.* (10x)

The study of Iris pseudacorus L. rhizome use among population

The study's objectives:

- The influence on patient's health after consuming the tea, or the alcoholic extract from *Iris pseudacorus L* rhizome.

Target population:

- All persons over 30 years, with health problems, who have consumed tea, or the alcoholic extract from *Iris pseudacorus L* rhizome in the last months.

Method of administering the questionnaire:

- It has been taken outside, in Gurbediu (Bihor County), place of harvesting the *Iris pseudacorus L* species.

As a result, the analysis as structure, considering gender, age, origin and studies, reinforces the finding that the percentage of people who have turned to popular medicine with *Iris pseudacorus L* rhizome, is owned by ordinary people, from villages, without higher education. The majority of respondents have a good opinion of the alternative traditional, or popular, treatments, compared to allopathic drug treatments.

Literature does not specify any treatment for malignant tumors, which uses the *Iris pseudacorus L* rhizome. However, those 9 interviewees, trusted and used this treatment, transmitted from our elders, from generation to generation, the results being very good each time. We, with all the technology that we have at hand today, have the moral obligation, first of all, to continue the researches, in order to know exactly the chemical composition and the active principles, responsible of beneficial effects on the body. We have to know the mechanism of action through which these vegetal products become medicinal, and the potential adverse effects, in order to avoid accidents.

CONCLUSIONS

The paper provides important and original information for the capitalization of *Iris pseudacorus L* species, from the spontaneous flora of Bihor County. There were determined by the optical microscope the following anatomical structures: *Iris pseudacorus radix*, *Iris pseudacorus rhizome*, *Iris pseudacorus herba*, *Iris pseudacorus folium* and *Iris pseudacorus flos*.

There was conducted a market study on the use of *Iris pseudacorus L* rhizome, among the population. The fact that all the interviewed persons had very good results after consuming either the tea, or the alcoholic extract of *Iris pseudacorus L* rhizome, and correlating all the obtained data, we conclude that researches must be continued. Knowing the mechanism of action, through which these vegetal products become medicinal, is very

necessary but also the potential adverse effects, in order to avoid the eventual errors of therapeutic treatments.

The results of such research are useful for obtaining new vegetal products with therapeutic potential, information contributing to the development in the field.

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