

SCUTELLARIA GENUS – POSSIBILITIES FOR USE OF SPECIES AS FLORAL AND MEDICINAL CROP

CANTOR MARIA¹, ERZSEBET BUTA¹, ZAHARIA ADRIAN¹

Abstract: Out of 350 species of *Scutellaria* found in the world, 90 species are reported from North America and 8 are native from Romania, but only three (*S. altissima* L., *S. galericulata* L., *S. hastifolia* L.) are very common. It is known under popular name Skullcap. *Scutellaria* species have been used in the traditional medical systems of China, Korea, India, Japan, many European countries, and North America. Medicinal plants have been used as traditional remedies for hundreds of years; it is used as an anti-inflammatory, antispasmodic, febrifuge, nervine, sedative and a strong tonic in alternative medicine. In medicinal purpose are use the roots and rhizome which contain flavonoids, starch, tanning substances, and other organic substances. They are perennial plant growing between 15-100 cm, belong to *Lamiaceae* family. It is in flower from June to September, and the seeds ripen from July to September, but can be dried for later use. Each stem only has a few flowers open at any one time. The blue to lavender flowers are two lipped. The flowers are hermaphrodite (have both male and female organs) and are pollinated by bees. At University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, we are working on introduction in our germplasm collection and study the behavior of some *Scutellaria* species, because in Romania it is no cultivate, growing only spontaneous or in collections of the Botanical gardens. Our research in all these areas will be presented and discussed.

Key words: germplasm, spontaneous species, flora, characteristics

Introduction

The request for novelties is very important in the field of ornamental horticulture. The scientific research is a major factor for progress and evolution in horticulture, nowadays, when the horticulture is receiving new attributes and values, by contributing to new Romanian accomplishments in an area that reunite the beauty and the useful.

Scutellaria is an herbaceous plant (mint family *Lamiaceae*). During the 19th century, the common name used in America was "Mad Dog".

Other names include: Scullcap, Hoodwort, Quaker Bonnet, Helmet Flower, Hoodwart, Greater Skullcap, American skullcap, Blue skullcap, Blue pimperl, Mad dog weed, Mad weed etc.

The name "skullcap" describes the shape of the calyx at the base of the flowers, which resemble medieval helmets. The yellow, fibrous root system supports a branching stem 0,3-1 m tall. Contains vitamins C & E, calcium, potassium, zinc, magnesium, iron, and volatile oils. The blue to lavender flowers are two lipped. Plants generally bloom from May to August. Above ground parts are gathered in summer at flowering time and they are dried and stored for later use as herb.

Followers of a 19th century Anglo-American school of herbal medicine were called Physiomedicalists and were the first to discover skullcap's use as a nerve tonic (<http://www.innvista.com/health/herbs/skullcap.htm>).

¹ University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, 3-5 Mănăştur Street, Romania, 0264-562774 int.179, marcantor@yahoo.com

The plant was first listed as an antispasmodic and sedative in the U. S. Pharmacopoeia in 1863 and is still regarded by Herbalists as a very effective remedy (KUNKEL, 1984).

They recognized that it had a "deeper" action on the nervous system than any other herb and used it for hysteria, epilepsy convulsions, and such serious mental illnesses as schizophrenia.

In 1973, ninety-two wooden tablets were discovered in a 2nd century tomb in northwestern China. Among the herbs listed there was baical skullcap. Other prescriptions were noted as well, including decoctions, tinctures, pills, and ointments.

This Chinese variety of skullcap has a long and central place in Chinese herbal medicine and used to treat "hot and damp" conditions as dysentery and diarrhea.

In "Flora Republicii Populare Romine" VIII, [SĂVULESCU & al., 1961] were described 8 *Scutellaria* native species, which are presented in the table 1.

Another author [BORZA, 1968] in "Dicționar etnobotanic" mentioned only 3 species (*Scutellaria altissima* L., *Scutellaria galericulata* L. and *Scutellaria hastifolia* L.), which are very common for Romania.

In the last period [DONIȚĂ & al., 2005] in "Habitatele din România" described the presence of *Scutellaria altissima* in Moldo-Muntenian pedunculate oak-lime-hornbeam ash forest, Câmpia Dunării, Podișul Central Moldovenesc and [AKERROYD & ANDREW, 2006] in "Roșia Montană: a case for protection rather than destruction", identify *Scutellaria hastifolia* [www.rosiamontana.ro].

The results obtained in the world concerning the best value of some *Scutellaria* spp. as medicinal [JOSHEE & al., 2002], cosmetics products [NALAWADE & TSAY, 2004] or ornamental justify the objectives of our research.

Materials and Methods

The investigation and conservation of the native *Scutellaria* spp. it is needed for improve the Romanian germplasm. In Romania the grasslands especially, and associated flushes and mires, proved to be species-rich and of great botanical interest, as well as often superb spectacles of colorful wildflowers. *Scutellaria* as a genus has numerous medicinal uses but in Romania it is no cultivate, growing only spontaneous or in collections in the Botanical gardens.

Nowadays in Romania no research were do concerning *Scutellaria* native species, and it is very important to known the possibilities to multiply this species for introduce in culture in order to see the medicinal compounds and then for can use as medicinal plant or in ornamental purpose.

Studies concerning the main medicinal compounds among Romanian *Scutellaria* spp. were not yet doing in Romania. Also in Romania were not used tissue culture methods for produce *Scutellaria* spp.

The purpose of this study is to identify the *Scutellaria* species for can introduce in various culture - gardens landscape, medicine and also for use in a future breeding projects in order to improve their characteristics and obtain the Romanian varieties with high quality.

We collected seeds of *Scutellaria* species from Romanian Botanical Gardens (*S. alpina* L., *S. albida* L., *S. altissima* L., *S. rubicunda* Hornem.) and from abroad Botanical

Gardens (*S. supina* L., *S. baicalensis* Georgi.). In 21 May 2009 the seeds were sown in greenhouse. The plantlets were rise between 10 to 15 June 2009 (Fig. 1). When the plantlets have 3 leaves (24-30 June) were moved in individual pots.

Results and Discussions

The percent for rise of the studied species was the next: *S. alpina* L. -5 %, *S. albida* L. - 90%, *S. altissima* L. - 85%, *S. rubicunda* Hornem. - 10%, *S. supina* L.- 65%, *S. baicalensis* Georgi. - 95%.

Through the vegetative period we made some observations and determinations of main morphological characteristics of *Scutellaria* species (Fig. 2). On the base of the results obtained, we can describe the studied species.

Scutellaria alpina L. it is an herbaceous perennial plant with a oblique rhizome, the stem is high up to 15-35 cm. The leaves are ovate, length between 15-30 mm, width up to 15 mm. The flowers are grouped in compact spikes, having a corolla purple violet with neck yellow white.

Scutellaria albida L. is a perennial growing to 20-35 cm, having an erect stem. It is in flower from June to August. The flowers are hermaphrodite and are pollinated by bees and flies. Inflorescences are raceme, with hairy, the corolla colored in yellow, length up to 15-18 mm.

Scutellaria altissima L. The stem is usually 30-100 cm high. The leaves are ovate. Flowers blue violet, unilateral, all on same side of stem, ceasing well below top of stem. The blooming is in June-August.

Scutellaria baicalensis Georgi is a perennial plant, growing to 40-80 cm high. The flower is move violet. Blooming time is in August, and seed ripen in September. The rhizome of this species contains flavonoids, it is used in traditional medicine (HUI & al., 2002).

Scutellaria supina L. present woody rhizome, with a stem sometimes violet, high to 10-45 cm, simple or branched, pubescent. The leaves are ovate with a length to 1-4 cm, dens inflorescence with a length 2-3.5 cm, yellow or golden yellow, flowering in the summer.

Scutellaria rubicunda Hornem. is a perennial plant that is flowering in June-August, having a stem with a violet spike; the stem is branched with ovate leaves. The high of plants is up to 50 cm.

Conclusions

Regarding the studies concerning *Scutellaria* species introduced in experimental field to Floriculture Department at University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, we can conclude that they had a good percent of rise except the species *S. alpina* L. and *S. rubicunda* Hornem.

It was follow the main morphological characteristics of each species because they did not studied yet in Romania.

In this fall the *Scutellaria* species will be planted outside in the field where we will monitor their behavior in Transylvania conditions in order to be used for analyzing their chemical compounds. Also, we will follow the possibilities for use of them in landscape design and also in public and private gardens.

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Tab. 1
Scutellaria species native in Romania

No. crt.	<i>Scutellaria</i> species	Native area in Romania
1.	<i>Scutellaria galericulata</i> L.	Bistrița, Turda, Reghin, Sibiu, Oradea, Arad, Olănești, Turnu Măgurele, Vatra Dornei, Hârșova, Ceahlău, Medgidia
2.	<i>Scutellaria hastifolia</i> L.	Năsăud, Bistrița, Sighișoara, Făgăraș, Sibiu, Oradea, Arad, Turnu-Severin, Craiova, Brăila, Delta Dunării
3.	<i>Scutellaria altissima</i> L.	Câmpia Turzii, Cluj, Brașov, Alba Iulia, Băile Herculane, Călimănești, Cozia, Craiova, Cheile Bicazului, Fălticeni, Delta Dunării, Bârlad
4.	<i>Scutellaria alpina</i> L.	Mountains: Rodnei (Ineu); Iezer-Păpușa (Dâmbovicioara); Făgăraș (Capra Budei in Cheia Gegiu); Retezat (Piule); Cernei (Arjana, Plugova)
5.	<i>Scutellaria supina</i> L.	Cheile Turzii, Băgău, Ciumbrud, Lopadea, Lopadea Nouă, Odverem, Ocnișoara, Blaj
6.	<i>Scutellaria columnae</i> All.	Carăș-Severin: Danube valley; Gura Văii-Vârciorova
7.	<i>Scutellaria orientalis</i> L. var. <i>pinnatifida</i> Rchb.	Stâncă Tohani; Tulcea (Niculițel, Piatra Roșie Căugăgia, Babadag, Babadag-Codru, Cheia - Măcin, Culmea Pricopanului); Constanța (Gura Văii, Fântânița-Murfatlar, Cheia-Târgușor, Hagieni, Dumbrăveni, Gura Dobrogei - Palazul Mic)
8.	<i>Scutellaria albida</i> L.	Vârciorova, Porțile de Fier

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Fig. 1. *Scutellaria* species after rise



Fig. 2. *Scutellaria altissima*