

3. THE PHARMACOGNOSY INVESTIGATION OF ASSOCIATED COUMARINS *LUPINUS LUTEUS* L.

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ABSTRACT

Grechana O. V., Saliy O. O., Serbin A. G.³, Fukleva L. A.¹.: The pharmacognosy investigation of associated coumarins *Lupinus luteus* L.

In this paper we focuses on the issue of pharmacognostical study of plants is widely used in animal breeding, is the active substance in the manufacture of dietary supplements - the yellow lupine (Fabaceae). Harvested grass were analyzed after acid hydrolysis

Keywords: Pharmacognosy, Investigation, Coumarins, Lupinus

INTRODUCTION

The genus *Lupinus* (*Lupinus* L.) is attributed to the legumes family (*Fabaceae* L.). About 1000 herbaceous, semi-bush and shrub, annual, winter and perennial lupines are described.

Of all the species of lupine, only four species are grown. Of these, three Mediterranean - *L. albus*, *L. luteus* and *L. angustifolius* - and one American perennial species - *L. polyphyllus* [1, 2, 4].

Wild forms of yellow lupine (*Lupinus luteus* L.) are found throughout the Mediterranean coast (western North Africa, Iberian Peninsula, Corsica, Sardinia, Sicily, southern Italy, Greece, Asia Minor). In the XIX century, the plant was brought into the culture and during this time extensive breeding work (on protein content in seeds; on protein content in green mass; on fat content) was carried out [2, 4].

The current stage of the development in the cultivation of lupine is characterized by a growing interest in lupine as an alternative to soybean in world agriculture due to the acute shortage of feed and food proteins.

Many scientists note the multifaceted use of this plant. It is used for various purposes in medicine, perfumery, agriculture, animal husbandry, forestry, horticulture, floriculture, soil protection, paint industry [2, 4, 5, 6].

Lupine in folk medicine is used to treat ulcers and tumors; opening of blocked passages in the spleen; in case of acne on the face; to quench nausea and increase appetite. The medicinal bandage of this plant quickly counteracts inflammation of the sciatic nerve. The cleaning of gangrene with lupine broth counteracts the putrefaction. Flour from this plant helps to get rid of moist ulcers on the head [2, 4, 5].

A number of biologically active additives have been registered in Ukraine, which contain different contents of biologically active substances obtained from lupines with recommenda-

tions for internal or external use. On the domestic market there are: “Hair Growth Formula” – capsules No. 60 and shampoo made by Russia; «Green pharmacy. Hair infusion. Collection – 2 – for hair loss, for fixing and hair growth” – 250 ml of domestic production; vitamins for women Women’s Ultra Mega No. 80 made by GNC, USA; Phytocomplex 5 – 50 ml of CJSC “Medikon”, Russia; Gistan cream, 30 ml of Vitamax firm, Kazakhstan, etc. [3].

In the widespread use of the plant, no comprehensive pharmacognostic study of the content and accumulation of many classes of biologically active substances were not conducted, the interaction of these compounds with each other and the environment, the effect on the human body of raw material of lupine.

AIM AND PURPOSE OF THE STUDY

Pharmacognostic study of the composition and quantitative content of bound coumarins in the aerial part of a representative of the genus *Lupinus* (Tourn.) L. - *Lupinus luteus* L.

MATERIALS AND METHODS OF RESEARCH

Plant material (grass) was harvested during the active flowering of the plant – (May – June) in the suburbs of Zaporizhzhya (Primorskoe urban-type village). They were dried on current of air under a canopy at a temperature of up to 40 °C.

A portion of the plant material was flooded with water, an internal standard (tridecane) and a few drops of sulfuric acid (dissolved) were added. It was kept warm for a certain time. After cooling and adding methylene chloride, the solution was extracted. The extractant was evaporated. The extract was analyzed chromatographically.

Agilent Technologies chromatograph with mass spectrometric detector. Chromatographic column - capillary with an inner diameter of 0.25 mm; 30 m long. Gas is helium carrier. The thermostat’s temperature and speed were programmed. A library of mass spectra was used to identify the components, combined with identification programs.

The number of components was calculated using the internal standard method.

DISCUSSION OF RESULTS

During gas-liquid chromatography of the raw material of yellow lupine after acid hydrolysis, 56 compounds were identified, 35 of which were identified. Notes the number of components belonging to the classes of fatty acids (palmitic, oleic, stearic, linoleic acids), which were found respectively: 19.3 mg%; 3.5 mg%; 1.1 mg%; 0.5 mg%.

Biologically active products of the class of alcohols and ketones (2 phenoxyethanol, methylisopropenyl ketone, furfural, maltol, etc.) were identified by gas-liquid chromatography in the raw materials of yellow lupine after hydrolysis.

In the plant material of lupine yellow after hydrolysis (in the bound state), two components from the class of true coumarins were identified: coumarin (16.4 mg%) and 6 methylcoumarin (2.7 mg%).

CONCLUSIONS

Gas-liquid chromatography was first performed with mass spectrometric detection of hydrolysed raw material of *Lupinus luteus* L., where 56 compounds were found, of which 35 components were identified. After hydrolysis, the raw material of *L. luteus* L. contained a number of biologically active substances – fatty acids, alcohols, ketones etc. Two components from the class of true coumarins were identified: coumarin (16.4 mg%) and 6-methylcoumarin (2.7 mg%).

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