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SECTION: PHARMACEUTICAL SCIENCE

Maliuhina O. O., Smoilovska H. P.
(Zaporizhzhia, Ukraine)

STUDY OF THE CONTENT OF UNSATURATED FATTY ACIDS IN SEEDS OF TAGETES ERECTA L. VAR. «ALBATROS»

Annotation. *The paper considers the results of a study of the content fatty acids in the vegetable plant raw materials (seeds) *Tagetes erecta* L. var. «Albatros». The fatty acid content was determined by gas chromatography. The quantitative content of fatty acids was determined by the method of internal normalization, taking the sum of the areas of all peaks for 100%. As a result of the experiment, it was found that in the seeds of *Tagetes erecta* L. var. «Albatros» are dominated by polyunsaturated fatty acids. The main unsaturated fatty acids of the studied vegetable plant material are linolenic (up to $35.970 \pm 1.799\%$) and linoleic (up to $26.492 \pm 1.325\%$) acids.*

Ключевые слова: *Tagetes erecta* L., fatty acids, unsaturated fatty acids, marigold, seeds.

Fatty acids in the human body perform a number of such biological functions as participation in the synthesis of thromboxanes, prostaglandins, structural elements of biological membranes, hormones, so they are promising for the production of medicaments with a wide spectrum of action [1-4]. Vegetable raw materials are an important source of fatty acids [4].

Tagetes erecta L. is a widespread, cultivated species of the genus *Tagetes* L. (Asteraceae), which known for the content of a large amount of biologically active substances, including carotenoids, flavonoids, essential oil, hydroxycinnamic acids, vitamins [5, 6]. Extracts from plant materials of marigolds exhibit antimicrobial, antifungal, antioxidant, wound healing, gastroprotective and hepatoprotective activity, and it is used to treat wounds and burns [5-7].

Despite the fact, that *Tagetes* species are used to treat a variety of diseases, the fatty acid composition of marigolds has not been studied enough. Therefore, the study of the qualitative and quantitative composition of the fatty acids of the seeds of *Tagetes erecta* L. is a big practical importance.

The aim of the work was to study of the content of unsaturated fatty acids in the seeds of *Tagetes erecta* L. var «Albatros».

Materials and methods. Marigold seeds were collected during the period of full maturity (July-August 2019) on the area of Ukraine. Seeds was dried to an air-dry state in an oven at a temperature of + 60°C [1]. The content of unsaturated fatty acids in vegetable raw materials was perform by gas chromatography according to the method of State Standrt 304187-96 «Vegetable oils. The method of determining the fatty acid composition». The quantitative content of fatty acids was determined by the method of internal normalization, taking the sum of the areas of all peaks for 100% [8, 9]. The results reported in this study are the average of at least five

measurements and they were expressed as means \pm standard deviations. The received data were calculated and statistically analyzed using the Statgraphics software "Microsoft Office Excel 10".

Results and discussion. Up to 6 unsaturated fatty acids were determined by gas chromatography in vegetable raw materials of *Tagetes erecta* L. var. «Albatros» (Fig. 1).

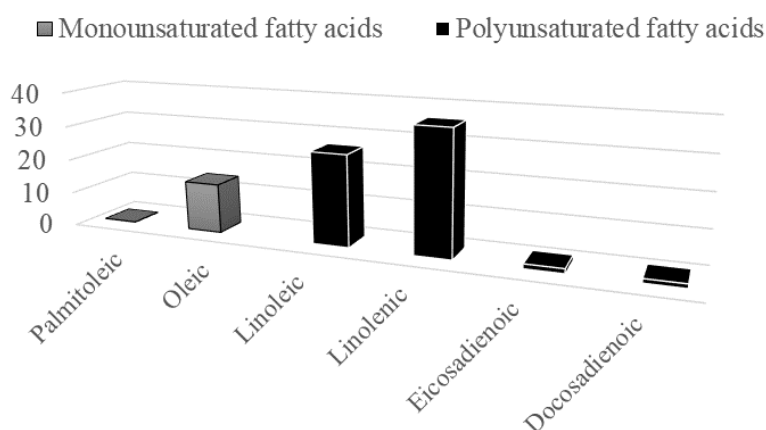


Fig. 1. Unsaturated fatty acids of *Tagetes erecta* L. var. «Albatros» seeds

As a result of the experiment, it was found that in the seeds of *Tagetes erecta* L. var. «Albatros» are dominated by polyunsaturated fatty acids (up to $41 \pm 2.05\%$ of the total fatty acids). The main unsaturated fatty acids of the studied vegetable plant material are linolenic (up to $35.970 \pm 1.799\%$) and linoleic (up to $26.492 \pm 1.325\%$) acids. Oleic acid is present in a significant amount (up to $14,371 \pm 0.72\%$). Eicosadienoic and docosadienoic fatty acids are present in small amounts, palmitoleic acid is present in trace amounts (up to 0.1%). The results of the study show the necessity for all round study of vegetable plant material in the seeds of *Tagetes erecta* L. var. «Albatros» as a promising plant source of unsaturated fatty acids.

Conclusions. The content of unsaturated fatty acids in the seeds of erect marigolds of the «Albatros» variety (*Tagetes erecta* L. var «Albatros») was studied. It has been fixed that polyunsaturated fatty acids dominate in the studied vegetable plant raw materials, the main of which are linolenic and linoleic acids.

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