

There is evidence regarding vitamins that the content of ascorbic acid and carotene in fireweed leaves increases after 24 hours and even 48 hours fermentation. Although these data could be slightly overestimated since non-specific titrimetric and photometric methods were used. Rising of ascorbic acid content was also confirmed by HPLC analysis in aqueous extract of fireweed aerial part.

Fermentation also changes pH of fireweed infusion. Non-fermented leaves infusion was *slightly acidic*, its pH was 5.97. Although this value decreased to 4.95 for 24h fermented raw material, it changed to 6.2 in 48h fermented leaves infusion.

Despite the relatively high popularity among population, the impact on the organism of these raw materials is not reliably known. Antioxidant activity of 24 h and 48h fermented leaves was studied. The samples were collected over 2 years. In 2017 non-fermented fireweed leaves were characterized by a lower antioxidant activity compared to short (24 h) and long (48 h) fermentation processes. In 2018, unprocessed samples were characterized by a higher antioxidant activity compared to fermented combinations. Only the short fermentation time gave positive results in antioxidant activity of fireweed leaves *in vitro*. The effect of extracts of fermented fireweed leaves on human immune cells was reported too. The study of anti-proliferative activity of extracts of fireweed aerial part after 6h fermentation was also carried out. Exposure of prostate cancerous cells (LNCaP, DU 145 and PZ-HPV-7) to extract of 6h fermented fireweed aerial part resulted in decrease of cell proliferation in the highest concentration by ~40% for the fermented ones without significant apoptosis.

Conclusions. Although fermented fireweed leaves products are widely represented in the food and dietary supplement markets, their processing technology has not been scientifically justified and pharmacological activity has not been sufficiently studied. Also during the fermentation the chemical composition of fireweed raw materials significantly changes, but their comprehensive phytochemical studies have not been carried out yet. Therefore, further phytochemical and pharmacological studies of fireweed fermented raw materials are perspective. The aim of this research could be to study of chemical composition of fireweed fermented leaves, herb and flowers, compare them with unprocessed raw materials, select the optimal technological conditions for obtaining drug substances or dietary supplements and screen its pharmacological activity.

MORPHOLOGICAL AND ANATOMICAL STUDY OF CALYX *DIOSPYROS KAKI THUNB* "CHARON" S SORT

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Introduction. In modern pharmacy, cultivated food, fodder and ornamental plants come to the fore in the search for new sources of biologically active substances. Of particular importance are those components of raw materials, which are wastes in the preparation of plants or their parts. Despite the growing volume of processing persimmon fruit, the cup, which is preserved in fruits and is a waste production, like seeds, has some prospects for use as economical sources of BAS.

Aim. To establish diagnostic signs of morphological and anatomical structure of the *diospyros kaki thunb* calyx of Oriental "Sharon" variety.

Materials and methods. Raw materials for research selected cups of *diospyros kaki thunb* of Eastern variety "Sharon". Morphological features were studied using a magnifier x2, x10, stereomicroscope "MBS-10" (Russia) (16h, 32h) by conventional methods, measurements were made on at least 10 samples of raw materials. The anatomic structure was examined with the microscope "Granum" (Austria) (40x, 100x, 400x).

Results and discussion. The calyx is actinomorphic, tetracyclic gamosepalous-leafsected. Segments are rounded in shape, the tip is sharpened, the edge of segments is whole. From the external side of the calyx is clearly pronounced innervation in the form of thin convex veins, the external epidermis of the calyx segment is formed by rather small cells of parenchymic form, mainly 4.5-cornered. The shell is thickened and porous. The etui is rare with a freely oriented orifice, of the amocytic type. The inner epidermis of the sepals segment consists of cells that practically do not differ from the outer epidermis cells, neither in size nor shape. The thickness of the shells is less and the porosity is less pronounced. On the cross section of the sepals can be seen dorsiventral structure.

Conclusions. For the first time the morphological and anatomical structure of kaki thubn calyx of Oriental "Sharon" as a possible and affordable type of medicinal plant raw materials was studied.

STUDY OF AMINO ACIDS COMPOSITION OF *PRUNUS DOMESTICA* FRUITS

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Introduction. In Nature number of amino acids are found in the free state, as well as are components of proteins, peptides, enzyme systems, hormones, etc. They can form complexes with other compounds and thus affect their bioavailability and pharmacological effect. In practical medicine, amino acids, their derivatives and products of exchange are widely used. For example, the use of the arginine improves the condition of patients after stroke and reduces blood pressure; γ -amino butyric acid reduces the excitement and has a calming effect, it is used in the complex treatment of epilepsy and hypertension; asparagine is necessary for proper function of nervous system.

Plum *Prunus domestica* L. (*Rosaceae* family) is widely cultivated in Kharkiv region, Ukraine as horticultural crop. Plums are juicy and can be eaten fresh or used for jam or vine as well as brendy production. Plums have a mild laxative effect and are recommended for constipation and bowel atony, especially in children and the elderly, for cleansing the bowel in its inflammatory conditions; have a positive effect on the liver in non-infectious hepatitis, improve the status of patients with atherosclerosis and hypertension, promote the excretion of cholesterol from the body, have diuretic effect.

At the department of Chemistry of natural compounds and Nutritiology a few extracts from plum fruits were obtained. For complex study of plum fruits and their standardization investigation of amino acid composition was necessary.

Aim. The aim of present work was study composition of free and bound amino acid of dried plum fruits.

Materials and methods. 0.5 kg of fresh plum fruits 'Ugorka' variety were harvested in Kharkiv region in September 2018. Fruits were dried, stones were removed.

Determination of the composition and content of free and bound amino acids in the plum fruits was performed using a high-performance liquid chromatograph company Agilent Technologies (model 1100) with flow vacuum degasser G1379A, 4-channel pump low-pressure gradient G13111A, automatic injector G1313A, column thermostat G13116A, diode detector G1316A. Chromatographic column "ZORBAX-XDB-C18 was 4.6×50 mm, filled with octadecylsilyl sorbent, with a grain size of 1.8 μm .

For investigation of free amino acids 0.3 g of finely ground dried plum fruits were weighed on an analytical balance and put into a 10 ml vial. Then, 3 ml of a 0.1 N hydrochloric acid solution with 0.2% β -mercaptoethanol was added into the vial. The vial was hermetically closed and placed for 2 hours in an ultrasonic bath at a temperature of 50 ° C.

For study total amino acid content (bound and free) 0.20 g of finely ground dried plum fruit were weighed on an analytical balance and put into a vial. Then, 3 ml of a 6 N aqueous hydrochloric acid