2. WJ Shen, MJ Qin, XY Deng Chemical constituents of leaves of *Iris lactea* Pall. var. *chinensis* Chin Phar J, 44 (2009), P. 249-251.
3. Arisawa M., Morita N., Kondo J., Takemoto T. Studies on constituents of *Iris* genus. Plant. VI. The constituents of the rhizoma of *Iris florentina* L. and the constituents of the petals of *Iris japonica* Thunb. // Jakuga Ku Lasshi. 1973. N93 (12). P. 1655-1659.

EVALUATION OF THE GRIN SEA URCHIN EXTRACT'S INCRETINS EFFECT

© ***Makarenko I.E., Faustova N.M., Pozharitskaya O.N., Makarova M.N., Shikov A.N.***

Saint-Petersburg Institute of Pharmacy, Leningrad region, Vsevolozhsky district, 188663, Kuzmolovo P 245, Russia

Diabetes mellitus type 2 (DM 2) is a global social problem. Million people around the world became sick with DM2 disease. Incretin-based therapy is the one of the most advanced methods in treatment of DM 2. According to the literature one of incretins-like activity mechanism is inhibition of dipeptidyl peptidase IV (DPPVI) and increase on native GLP-1 plasma level.

The aim of this study was to investigate incretins-like effects and mechanisms of activity of sea urchin *S. droebachiensis* extracts.

The objects of the study was eight extracts from internal organs of sea urchin *S. droebachiensi*: (KLS-070, KLS-074, KLS-075); gonads (KLS-071, KLS-072, KLS-073) and coelomic fluid (KLS-076, KLS-077). Sitagliptin, known as inhibitor of DPP-IV was used as the reference drug.

Inhibition effect of the dipeptidyl peptidase IV activity was studied in vitro (human DPPIV, Sigma-Aldrich) and in vivo (oral administration to Wistar rats). In vitro Chromogenic substrate method with glycine-proline-p-nitroanilide (Gly-Pro-PNA) as a substrate was used. Sea urchin extracts' activity was tested on mouse's with DM2 and rats with metabolic syndrome animal models.

As a result inhibition of DPP-IV was observed for fraction from gonads only (KLS-071, KLS-072, KLS-073) at the concentration of 112, 73 and 30 ug/ml respectively.

Competitive inhibition was determined for most active substance — KLS-73. In vivo assay KLS-073 also had showed anti DPP IV activity.

In next study KLS-073 (2–20 mg/kg) had showed antihyperglycemic activity in DM2 model. In metabolic syndrome model of rats KLS-073 (doses 0.34–1.11 mg/kg) had showed antihyperglycemic, antihypertensive and regenerative action against pancreatic β-cels.

These results suggest utilization of *S. droebachiensis* as a potential new source of therapeutic compounds for the treatment of MD2 and metabolic syndrome. However, further purification of the active compounds is necessary in order to identify their chemical nature and to evaluate their potential as novel drugs.

PROSTAGLANDINS AND HORMONES IN EXTRACTS OF SEA URCHINS GONADS, *STRONGYLOCENTROTUS DROEBACHIENSIS* (O. F. MÜLLER, 1776)

© ***Ushakova N.V., Faustova N.M., Mityushova E.V., Pozharitskaya O.N.***

Saint-Petersburg Institute of Pharmacy, Leningrad region, Vsevolozhsky district, 188663, Kuzmolovo P 245, Russia

The prostaglandins (PG) are fatty acid derivatives that play a crucial role in a variety of physiological processes. PGs and their synthetic analogs are widely used in clinical practice. Hormones testosterone, estradiol and progesterone are biologically active substances used as components of various drugs and cosmetics. The evaluation of natural products containing different PGs and hormones is a promising research objective.

The purpose of this research was the determination of prostaglandin amount in extracts of gonads of green sea urchins Strongylocentrotus droebachiensis (O.F. Müller, 1776).

Extracts of eggs of Sea Urchins IE-1, IE-2, IE-3 were obtained by sequential extraction of gonads in several mixtures of solvents with increasing polarity. The extracts were suspended in phosphate buffer and then

Table 1. Concentrations of hormones in extracts of sea urchins gonads, ng/g of extract

Sample	Estradiol	Progesteron	Testosteron
IE-1	4,7±0,2	60,4±2,7	9,8±2,0
IE-2	20,2±2,8	42,3±5,8	167±25

were hydrolyzed with 0.01 M HCl [1]. Concentration of PGs was determined by PG Screening EIA Kit (competitive binding) ("Cayman Chemical Company", USA). This Kit has 100% cross-reactivity for PGE1, PGE2, PGF1α, PGF2α. Concentrations of hormones were determined by Testosteron, Estardiol and Progesteron Elisa Kit ("Diagnostics Biochem Canada Inc").

Concentrations of PGs in IE-1, IE-2 and IE-3 phosphate buffer solutions were 0.92, 0.82 and 1.63 ng/mg. After acid hydrolysis of the samples higher concentrations of PG's were detected: it was 1.39 and 1.47 ng/mg for IE-1 and IE-2 extracts respectively. Prostaglandins E2 and mucin were found in IE-1 and IE-2 extracts.

The results of determination of hormones in IE-1 and IE-2 extracts are presented in Table 1. In IE-3 extract were no hormones to be found.

This research proves that extracts of sea urchins gonads can be considered as progenitors of new pharmacological agents so far as they show high concentrations of biologically active substances and do not bear risks of infecting a patient with a cross-species (e.g. viral) diseases.

References:

1. Wasson K.W., Gower B.W., Hines G.A., Watts S.A. // Comparative Biochemistry and Physiology. Part C. 2000, V. 126, P. 153-165.

CHEMICAL COMPOSITION OF VOLATILE COMPONENTS OF CO_2 EXTRACT AND ESSENTIAL OIL FROM *CITRUS LIMON (L) BURM*

© ***Molokhova E.I., Ponamareva E.I.***

Perm State Pharmaceutical Academy, Perm, Krupskya st., 46

Researches at Institute of gastroenterology republic of Tajikistan suggests that the essential oil (EO) of a lemon Citrus Limon (L) Burm possesses choleretic, anti-inflammatory, hepatoprotective and antispasmodic properties [1]. Pharmacological action due to the presence of complex of essential oils in a peel of a lemon with main components: citrene, linalol, pinene, citral [2]. For preservation of the BAS complex in a native state use of supercritical carbon dioxide extraction of a peel of a lemon is perspective [3].

Research objective — comparative study of a chemical profile of CO_2-extract and essential oil from a peel of the lemons, which have been received in the Republic of Tajikistan.

Table 1. Composition and quantity of volatile components of essential oils and CO_2-extracts of peel of a lemon

№	RI	Name of a component	Content, mass.%*	
			EM	CO_2-extract
1	925	α-Thujene	–	0,25
2	934	α-pinene	2,48	1,58
3	973	Sabinene	0,24	1,23
4	978	β-Pinene	7,59	6,68
5	1030	Limonene	74,83	71,09
6	1059	γ-Terpinene	3,89	10,15
7	1086	Terpinolene	–	0,67
8	1102	Linallol	0,40	1,48
9	1271	Geranial	2,06	0,72
10	1378	Geranyl acetate	–	0,34
11	1423	Caryophyllene	0,40	0,84
12	1509	b-Bisabolene	–	1,09

Notice: * — ratios of components in a Sample