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Цей збірник наукових доповідей присвячений основним підсумкам виконання Стратегічного плану дій по реабілітації і охороні Чорного моря (1996-2000 рр.), підсумкового документа першого етапу виконання Міжнародної Чорноморської Екологічної Програми ООН. У цьому зв'язку надруковані матеріали відображають основні розділи Програми, а саме: швидке реагування при надзвичайних ситуаціях, моніторинг забруднення і стандарти якості навколишнього середовища, захист біологічної різноманітності, розробка загальної методології управління прибережною зоною моря, рибальство, освіта і громадська поінформованість в природоохоронній області. В статтях представлені результати раніше не надруковані результати наукових досліджень. Подані дані, їх інтерпретація і закінчення належать авторам повідомлень і ні в коєму разі не можуть бути приписані членам організаційного комітету, які склали даний збірник.

Збірник призначень для широкого кола спеціалістів у галузі біології і екології моря, океанографії, техногенної безпеки і охорони природи.

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Present issue is devoted to the main results of Strategic Action Plan for the Rehabilitation and Protection (SAPRP) of the Black Sea (1996-2000) implementation. The SAPRP is a resulting document of the Black Sea Environmental Program (GEF/UN/UNDP) first step. The published materials have been reflected by the main Program sections: emergency response, pollution monitoring and environmental quality standards, protection of biodiversity, integrated coastal zone management, fisheries, environmental education and public awareness. These papers are the results of scientific research haven't been unpublished earlier. The findings, interpretations and conclusions expressed in papers, are in own property of the authors and should not attributed in any manner to the members of organization committee, which prepared this issue.

The issue was design for specialists in the field of marine biology and ecology, oceanology, technogenic safety and environmental protection.

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THE STEROL CONTENT IN *SCAPHARCA INAEQUIVALVIS* OF THE BLACK SEA

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We take an interest in the bivalve mollusks in many reasons. Except of their commercial value (the food for man and some marine Crustacea), the special interest present the biological and pharmacological role of fat acids, containing in them (It is known that fat acid 20 : 5n3 can be useful in treatment of cardiovascular diseases). The sterols constituents of bivalve mollusks is also of biological and pharmacological interest. They are precursors of hormonally active substances and of group **D3** vitamins and because of their hypocholesterolemic action on mammals and birds.

Scapharca attract our attention as autacclimatizant from Adriatic to Black Sea and as potential source of provitamins D₃. Except of this, it is very important to investigate the influence of ecological conditions on quantitative content of sterols in *S.inaequivalvis* (Braguiere).

It is very few known about sterol constituent in this mollusk. The data were obtained by investigators applied to sterols of *Scapharca* from Adriatic Sea. As to Piretti data (Piretti et al., 1982), the lipidic fractions, extracted from the *S.inaequivalvis* tissues, contain practically all sterols in the free state, while only traces of esterified sterols were identified. There are not at all data about sterols of *Scapharca* that appears in Black Sea from Adriatic shores. We have the first steps undertaken to cognize the sterols content of autacclimatisant *S. inaequivalvis*.

Samples were in august 1988 in Zhebriyanskaya bay and in august 1991 at Caucasian coast collected. There were three sizes of mollusk investigated: 2-3, 3-4 and 4-5 cm. The total amount of provitamins D₃, 7- dehydrocholesterol, methasterol, lathosterol and cholesterol was determined by thin-layer chromatography (Lisboa, 1969), photocolometric (Moore and Baumann, 1952; Rzhavskaya, 1966) and spectrophotometric (Jahimovich et al., 1974) methods.

There are mosaic changes in sterols content in *Scapharca* of different sizes and inhabited in different ecological conditions. So, the total amount of provitamins D₃ in mollusk from Zhebriyanskaya bay (% of insaponifiable fraction) was more than three times over in *Scapharca* of 3-4 cm compared to *Scapharca* of 2-3 cm (2,93% and 0,87% accordingly). The percentages content of identified 7-dehydrocholesterol, lathosterol, methosterol and cholesterol were also much higher in *Scapharca* of 3-4 cm. Calculating on the wet weight only percentage content of lathosterol and methasterol was higher in mollusk of this size, while cholesterol, 7-dehydrocholesterol and total amount of provitamins D₃ was higher in *Scapharca* of 2-3 cm size.

In August 1991 samples of *Scapharca* were collected at Caucasian coast. The total amount of provitamins **D3** in *Scapharca* of 2-3 cm size was more than twice higher in mollusks from st.119, in region of N. Michailovka compared with that of st.143, region of Golovinka (2,07% and 0,99% accordingly), but the content of 7-dehydrocholesterol and cholesterol were higher on station 143 (0,46 and 0,03; 4,12 and 3,74 accordingly). The lathosterol was absent in *Scapharca* at this station at all.

Comparing two groups of *Scapharca* - 3-4 and 4-5 cm size it was discovered that the total amount of provitamin D₃ practically was identical. Only the content of cholesterol was more than twice higher in *Scapharca* of 4-5 cm. On the ground of receiving data may come to conclusion that ecological conditions have more influence on content of sterols in *Scapharca* than size of mollusk.

The investigation of anatomical distribution of sterols in *Scapharca* is of great interest since it maybe useful of gaining information about a biological role of these lipid components. We have carried out such investigations on another mollusks. *Scapharca* from the Black Sea was not investigated in consequence of insufficient samples of mollusks. We are faced with solving of this problem. Such investigations were carried out by Italian scientists (Piretti et al., 1982) on *Scapharca inaequalis* collected on the Adriatic shores. To obtain the information about the anatomical distribution of sterols, the mollusks were dissected at gills, mantle, foot with digestive diverticula, haemolymph and analyzed separately. The samples were collected monthly (to verify if significant variations in the anatomical distribution of the sterols would be observed in the course of the year).

By means of thin-layer chromatography (TLC) of corresponding acetyl derivatives of sterols authors showed, that qualitative composition of sterols from different tissues is identical, but differ quantitatively that indicate on different functional role of sterols in each tissue. We received such data on another mollusks (*Mytilus galloprovincialis* and *Mya arenaria*).

According to Piretti investigations (1982), the percentage content of the sterols in different tissues of *Scapharca* marked difference, making up 78 mg/100g of wet tissue in gills, 73 mg in mantle, around 105 mg in the foot with digestive diverticula and around 120 mg in haemolymph. It appears higher in the cold months.

The high sterols content in the foot together with digestive diverticula may be explained by the fact, that the reproductive organs of the mollusk are present in digestive diverticula. During the collection of mollusk samples of gonads were at a mature age and were rich with lipids. The great cholesterol content in gonads, perhaps, is connected with special physiological state of mollusks, which are productive in steroid hormones in period of sexual activity. As it generally known, cholesterol is a precursor of steroid hormones (Vassalo, 1973; Lubet et al., 1985).

Sterols, were discovered in *Scapharca* tissues, are the same in qualitative composition as in another bivalve mollusks (Voogt, 1972; Goad, 1978), but differ quantitative.

According to our data, the sterol content in *Mytilus galloprovincialis* mean quantity higher than in *Scapharca* that is acclimatized in Black Sea, but it depends on ecological conditions. So, the total amount of provitamins D₃ fluctuates in whole organism of *M.galloprovincialis* from 2 to 231 mg/100 g wet weight, while in *Scapharca* - from 9 to 31 mg/100 g wet weight.

Thus, the sterol investigations in different tissues of *Scapharca inaequivalvis* permit to determine the really quantitative content of it in every separate organ. The qualitative content of sterols is identify in all organs. The quantitative indices of *Scapharca* sterols indicate that this mollusk is potential source of important biologically active substances of lipid nature, that maybe used for creating of medical preparations, pharmacological substances, also in cosmetic, perfumery and as fodder additions in rations of animals and birds, that raised their weight.

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