

SMALL SEA FISH AS SOURCE OF GLYCOSAMINOGLYCANS, ESSENTIAL AMINO ACIDS, ESSENTIAL FATTY ACIDS AND MICROELEMENTS USED FOR PHARMACEUTICAL PURPOSES

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Abstract

By an original patented technology we have obtained a bioactive complex from *Engraulis encrassicolus ponticus*, *Sprattus sprattus sprattus* and *Odontogadus merlangus euxinus*, constituted by glycosaminoglycans, essential amino acids, essential fatty acids, eicosanoids, glycerolphosphates, and microelements. So, by their chemical composition, the bioactive extracts from small sea fish is useful to prevent unsettle of the macromolecular structure and keep the functionality of the extracellular matrix from conjunctive, cartilaginous and bone tissue.

Keywords: Biotechnologies, Black Sea, Fishes

Sea organisms arouse a major interest for the extraction of biological active substances with multiple and valuable therapeutical applications all over the world [1], [2]. This work provides for the elaboration of an original extraction and purification technology of glycosaminoglycans from sea organisms (small sea fish) and their chemical, biological and pharmacological analysis together with *in vitro* and *in vivo* tests, for the purpose of extracts' conditioning towards their use as pharmaceutical products (unguents, pastilles) with anti-inflammatory activity, tissue restitution properties, anticlotting and antithrombotic activities, biostimulating, antioxidative, hepatoprotective and antiproliferative qualities. The physico-chemical analysis of different batches obtained in laboratory revealed that obtained extracts from small sea fish represent a complex of active biological substances composed from glycosaminoglycans (44-60% sulfated form), amino acids 3.5-12%, from which 2-6.5%, essential amino acids (valine, leucine, isoleucine, threonine, methionine, lysine, phenylalanine, tryptophan), essential fatty acids 1-2% (linoleic acid, arachidonic acid). There were identified glycerophosphates, creatinin, mineral salts (Ca, Na, K, Fe, Mg, Se, Ni, Cu, Si) [3]. The extracts show a dose dependent inhibition of hyaluronidase and induce a significant decrease of elastase (MMP12) and collagenase (MMP1) enzymatic activity; also favor the *in vitro* collagen fibrils formation, manifest a strong antioxidant activity, that is present a very valuable therapeutically activity which will be capitalized in medicine and dermo-cosmetics products. Bioactive complexes rich in glycosaminoglycans obtained from small sea fish manifest a strong anti-inflammatory activity comparatively with "diclofenac". Taking into consideration the presented results, the chemical composition of the bioactive complexes obtained from small sea fish and the therapeutic effects highlighted by *in vitro* and *in vivo* experiments shows that these extracts can be conditioned and used successfully in the form of medicinal products with valuable therapeutic properties and minimal side effects.

References

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