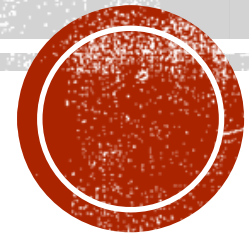
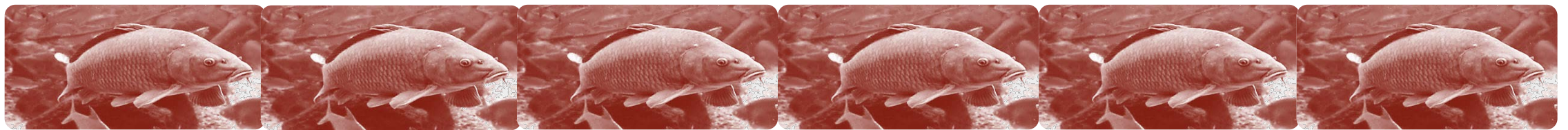


BIOCHEMICAL COMPOSITION OF AQUATIC ORGANISMS



Seafoods have a variable content of protein generally ranging from 12 to 26%. Contrary to animal meat, where ageing brings about a desirable flavour and texture in the product, seafoods tend to deteriorate rapidly during the post-mortem period. Presence of highly unsaturated fatty acids in seafoods has been attributed to their possible health benefits in human nutrition. Furthermore, other valuable components such as enzymes, antifreeze proteins, chitin, carotenoid pigments and flavorants may be isolated from aquatic species.





The fish has a skeletal or cartilaginous structure which provides support for the body. The muscles which form the middle part account for most of the weight of the fish. The skin forms a cover, often with an outer layer of scales, and secretes a slimy mucus, which lubricates the fish and seals the surface. The gills are the main part of the breathing mechanism and take up oxygen from the water.



The organs in the body cavity, including the stomach, intestine and liver are known as the guts. Removal of the guts is normally the first step in handling and preservation. Shellfish has no backbone but a harder outer cover or shell exoskeleton which gives the necessary support and protection.



The principle components of the fish muscle, water, fat and protein must be preserved with little or no changes.

Water is the main constituent with considerable variations typically 80 percent in lean fish and 70 percent in fatty fish. Carbohydrates, minerals, vitamins and some water extractable components are examples of other minor substances present. The protein content is usually 15-20% whereas the fat content varies widely from species to species and from season to season. It can be low as 0.5% in lean starved fatty fish and can reach over 20% in some species. In lean fish the bulk of the fat is stored in the liver and not in the muscle.



Lipid



- From a health point of view there are important differences in the two types of lipids in respect to fatty acids. Fortunately twelve fatty acids describe most fish and shellfish lipids.
- The lean fish and indeed all fish have a basic cellular lipid that averages 0.6-0.7% on a wet weight basis for White muscle and is mostly phospholipid with the dominating phosphatidylcholine at 60% accompanied by 20% phosphatidylethanolamine. The balance of this cellular lipid includes minor phospholipids some cholesterol and some triglyceride.





Protein



- Approximately 11-27% of seafoods consist of crude proteins. Seafood proteins, like those of all other muscle foods, may be classified as sarcoplasmic, myofibrillar and stroma type. The sarcoplasmic proteins, mainly albumins account for 30% of the total muscle proteins. A large proportion of sarcoplasmic proteins may be composed of haemoproteins.
- The myofibrillar proteins in muscle are myosin, actin, actomyosin and troponin and these account for 40-60% of the total crude protein content of fish.
- The rest of the muscle proteins, classified as stroma are mainly collagenous matters.

