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CHAPTER- 30

WATER BINDING PROPERTIES OF FISH/SHELL FISH PROTEINS AND METHODS OF ITS EVALUATION

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Introduction:

A number of protein isolates and concentrates have been developed from plant, animal and microbial sources to serve as functional

ingredients in a wide and ever growing range of food applications. The successful use of these protein ingredients depends upon their abilities to fulfil one or more specific functional requirements (Kristinsson, H. G., & Rasco, B. A., 2000). Many of these protein ingredients are in the dehydrated form. However, since they are not generally functional in the absence of a liquid water phase, the first and perhaps most critical step in imparting their desired functional property to the food system is their interaction with water to rehydrate, swell and solubilize them. The chemical, physical and functional properties of the protein in a particular food system are dependent to a large degree upon rate and extent of hydration or rehydration. Further, the ability of the proteins to bind and immobilize water is itself one of its most important functional properties in most food applications. The nature of the protein-water and protein-protein interactions is critically important in determining whether the protein will function in the food system as a colloidal dispersion, gel or insoluble precipitate. One of the major problems with any muscle food product, including sea foods, is the loss in the ability of muscle and muscle proteins to hold water. Loss in water-holding capacity costs millions of dollars to the fish and meat industry annually. The most important quality characteristic of raw products is their ability to retain moisture (Huff-Lonergan et al., 2005). Traditionally phosphates, salts, starches, gums and plant source proteins have been used to improve water holding capacity in