

## Kinetic Modeling of Colour and Textural Properties of Stored Rohu (*Labeo rohita*) Fish

**Authors :** Pramod K. Prabhakar, Prem P. Srivastav

**Abstract :** Rohu (*Labeo rohita*) is an Indian major carp and highly relished freshwater food for its unique flavor, texture, and culinary properties. It is highly perishable and, spoilage occurs as a result of series of complicated biochemical changes brought about by enzymes which are the function of time and storage temperature also. The influence of storage temperature (5, 0, and -5 °C) on colour and texture of fish were studied during 14 days storage period in order to analyze kinetics of colour and textural changes. The rate of total colour change was most noticeable at the highest storage temperature (5°C), and these changes were well described by the first order reaction. Texture is an important variable of quality of the fish and is increasing concern to aquaculture industries. Textural parameters such as hardness, toughness and stiffness were evaluated on a texture analyzer for the different day of stored fish. The significant reduction ( $P \leq 0.05$ ) in hardness was observed after 2nd, 4th and 8th day for the fish stored at 5, 0, and -5 °C respectively. The textural changes of fish during storage followed a first order kinetic model and fitted well with this model ( $R^2 > 0.95$ ). However, the textural data with respect to time was also fitted to modified Maxwell model and found to be good fit with  $R^2$  value ranges from 0.96 to 0.98. Temperature dependence of colour and texture change was adequately modelled with the Arrhenius type equation. This fitted model may be used for the determination of shelf life of Rohu Rohu (*Labeo rohita*) Fish.

**Keywords :** first order kinetics, biochemical changes, Maxwell model, colour, texture, Arrhenius type equation

**Conference Title :** ICSRD 2020 : International Conference on Scientific Research and Development

**Conference Location :** Chicago, United States

**Conference Dates :** December 12-13, 2020