

(TMA), Total Volatile Nitrogen (TVN) values of fish flesh was also analyzed to quantify the extent of spoilage. All the analyses were carried out for a period of 7 days with one day interval. In total, five experiments were conducted in which each experiment had 6 samples analyzed over 7 days storage period. The results revealed that the color values (L^* , a^* , b^*) of skin and gill were not following any particular trend with respect to storage days. However, in color values (L^* , a^* , b^*) of fish eye, reduction in the L value (24 to 20) and increase in a value (0.16 to 2.65) was observed with storage days. The cross examination of Hunter color values with the color of physical photograph also concurred with fish eye color, which turned dark and reddish at the end of storage. The spoilage indicators like TMA and TVN also indicated the extent of spoilage and those values were interpolated to get benchmark color values for fish eye to decide the level of fish freshness.

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Optimization of dietary fibre extraction from *Ulva lactuca* using response surface methodology

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This study was conducted to optimize extraction conditions of dietary fibre from *Ulva lactuca* and to evaluate its functional properties. Response surface methodology (RSM) was adopted following Box-Behnken design to determine the

optimal conditions of three independent variables namely concentration of the enzyme (% w/v, X_1), time of enzyme hydrolysis (minutes, X_2) and temperature of enzyme hydrolysis ($^{\circ}\text{C}$, X_3) for five response variables namely yield, total dietary fibre (TDF), water holding capacity (WHC), oil holding capacity (OHC) and swelling capacity (SWC). The models obtained by RSM produced a satisfactory fit to the data with respect to dietary fibre extraction (for yield: R^2 0.98, $p < 0.0004$; TDF: R^2 0.95, $P < 0.007$; WHC: R^2 0.97, $p < 0.0019$; OHC: R^2 0.93, $p < 0.02$ and SWC: R^2 0.91, $p < 0.03$). The results revealed that the optimum extraction conditions were 0.95%, 60°C and 63.82 min for enzyme concentration, hydrolysis temperature and hydrolysis time, respectively. Under this optimal condition, the yield, TDF, WHC, OHC and SWC were 22%; 91.36%; 11.14 g/g; 1.24 g/g and 12.47 ml/g, respectively. Structural pattern and surface morphology were conducted using Fourier-transformed infrared spectroscopy (FT-IR) analysis and scanning electron microscopy (SEM) analysis. The SEM image of dietary fibre showed irregular, uneven and intact surface morphology. The results showed that RSM can optimize the extraction of dietary fiber from *U. lactuca*. Results indicated that DF extracted from seaweed showed good functional properties, which could be considered as a promising functional food ingredient with wide application in the food industry.

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Dominance of *Noctiluca scintillans* in estuarine region of river Ganga in relation to hydrological parameters

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