Biogenic amines, amino acids and microflora changes in Indian mackerel (Rastrellinger kanagurta) stored at ambient (25–29 °C) and ice temperature (0 °C)

ABSTRACT

Biogenic amines formation in Indian mackerel of tropical region was investigated during storage at ambient (25–29 °C) and ice temperature (0 °C) in relation with changes of amino acids content and amines forming bacteria. All amines increased significantly during storage at two temperatures except for spermidine and spermine. Histamine concentration of 363.5 ppm was detected after 16 h stored at ambient temperature. Aerobic plate count of fish stored at ambient temperature reached 6.98 log CFU g−1 after 16 h, close to the upper limit (7 log CFU g−1) suggested by International Commission on the Microbiological Specifications for Foods (ICMSF). However, proper icing procedure retarded the formation of histamine effectively, resulting only 8.31 ppm after 16 days of ice storage. Aerobic plate count of 5.99 and 7.72 log CFU g−1 were recorded for fish stored in ice after 16 days and ambient temperature after 20 h, respectively. Histamine exhibited high correlation with histidine ($r2 = -0.963$, $P < 0.01$) as well as cadaverine with lysine ($r2 = -0.750$, $P < 0.05$). However, tyramine-tyrosine demonstrated a weaker relationship ($r2 = -0.138$, $P > 0.05$). As storage time progressed, the amines forming bacteria grew significantly except for that stored in ice.

Keyword: Histamine; Cadaverine; Putrescine; Storage; Indian mackerel; Amino acids