

DETERIORATIVE CHANGES DURING ICE STORAGE OF IRRADIATED BLUE JACK MACKEREL (*TRACHURUS PICTURATUS*)

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ABSTRACT

Changes in the content of histamine (Him), tyramine (Tyr), agmatine (Agm), spermidine (Spd), putrescine (Put), cadaverine (Cad) and volatile basic nitrogen (VBN) were examined during the ice storage of blue jack mackerel irradiated at different levels (0, 1, 2 and 3 kGy). The variation of these amines in white and dark muscle of fish irradiated with 0 and 3 kGy was also investigated.

The levels of Him, Tyr, Put, Cad and VBN increased with storage time and their production was significantly reduced by irradiation of fish. Him content in the control lot exceeded the maximum allowed in fresh fish (100 g/kg) after 7 days, while in the irradiated lots a maximum value of 54.16 mg/kg of Him was determined after 23 days. No significant differences were determined in nonvolatile amine production in samples irradiated with 1, 2 and 3 kGy.

Although there was a correlation between fish quality deterioration and both Him and other amine production in irradiated fish, the highest values detected in spoiled fish were considerably lower than the maximum levels allowed. Thus, since the production level of Him and other nonvolatile amines is irradiation dependent the use of these compounds as quality indices may not be appropriate. Nevertheless, it is evident that irradiation, even at the lowest level used, extends the ice storage shelf-life of blue jack mackerel.

INTRODUCTION

The use of low levels of ionizing radiation in conjunction with refrigeration has been proposed as a possible method of preserving marine fish and shellfish