Investigating of the range of changes in the amount of histamine measured in Persian Gulf Anchovy fish in two methods of drying (industrial and traditional methods)

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Abstract

Various microorganisms, including Psychrotroph bacteria, are responsible for a number of food-origin diseases, including histamine poisoning.This study was conducted to investigate the range of changes in the amount of histamine measured in Persian Gulf Anchovy fish in two methods of drying (industrial and traditional methods) and the effect of different methods on the amount of bacterial flora according to different seasons and times. Sampling was performed in three seasons of autumn, winter and spring of 2019-2020 from the dominant fishing areas of Anchovy species in the Persian Gulf region. Determine the amount of histamine was performed by high performance liquid chromatography HPLC and calculate the contamination of the unknown sample using the calibration curve and dilution factor and using the standard method of the Iranian Institute of Standards and Industrial Research, National Standard Iran, No. 9594. The results showed that although the range of changes in the amount of histamine measured in both industrial and traditional methods was very close to each other, but the comparison of two methods shows that the level of histamine measured in the traditional method is much higher. the comparison of the means using Kolmogorov test showed that there was a significant difference between the two methods in terms of the amount of histamine measured ($P<0.05$). The results of Kolmogorov-Smirnov test in relation to the effects of seasonal changes on the trend of changes in the amount of histamine measured in the two methods of drying fish showed significant difference in the amount of histamine measured in each of the studied seasons and also between the two methods used for drying the fish ($P<0.05$). In this study, regardless of the effects of time treatment in each of the fish drying methods, we do not have a significant difference between the studied seasons in terms of measured histamine levels ($P> 0.05$). According to studies, the proportion of bacteria in different seasons has increased over time, which may be due to the fact that during the process of keeping fish, the number of Psychrotroph bacteria as the dominant bacterial species has been increased. Also according to the results compared with other reported cases, it can be concluded that measurable histamine concentrations in fish products may be variable due to the speed of histamine production, method used in each season and the rate of their decomposition during preparation and drying.

Keywords: Persian Gulf, Anchovy fish, Histamine, Season.