Biogenic amine levels during Ras cheese ripening

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Cheeses are among those high-protein-containing foodstuffs in which enzymatic and microbial activities cause the formation of biogenic amines from amino acids decarboxylation. The amount of biogenic amines in cheese may act as a useful indicator of the hygienic quality of the product. In other words, their presence in cheese is related to its spoilage and safety. Formation of biogenic amines during Ras cheese (Egyptian hard cheese) ripening was investigated for 4 months. Three batches of Ras cheese were manufactured using Egyptian traditional method. From each batch, Samples were collected at 1, 7, 15, 30, 60, 90 and 120 days after cheese manufacture. The concentrations of biogenic amines (Tyramine, Histamine, Cadaverine and Tryptamine) were analyzed by Thin layer chromatography (TLC). There was a significant increased ($P<0.05$) in Tyramine levels from 4.34± 0.07 mg|100g in the first day of storage till reached 88.77± 0.14 mg|100g at a 120-day of storage. Also, Histamine and Cadaverine levels had the same increased pattern of Tyramine reaching 64.94± 0.10 and 28.28± 0.08 mg|100g in a 120- day of storage, respectively. While, there was a fluctuation in the concentration of Tryptamine level during ripening period as it decreased from 3.24± 0.06 to 2.66± 0.11 mg|100g at 60-day of storage then reached 5.38±0.08 mg|100g in a 120-day of storage. Biogenic amines can be formed in cheese during production and storage: many variables, as pH, salt concentration, bacterial activity as well as moisture, storage temperature and ripening time, play a relevant role in their formation. Comparing the obtained results with the recommended standard by Food and Drug Administration ***"FDA" (2001)***, High levels of biogenic amines in various Ras cheeses consumed in Egypt exceeded the permissible value (10 mg%) which seemed to pose a threat to public health. In this study, presence of high concentrations of biogenic amines (Tyramine, Histamine, cadaverine and Tryptamine) in Egyptian Ras cheeses reflects the bad hygienic conditions under which they were produced and stored. Accordingly, the levels of biogenic amines in different cheeses should be come in accordance with the safe permissible limit recommended by FDA to ensure human safety.