Borax Compounds Tested at Permanent Meatball Shops in The Area of Bantaeng Sub-District using Qualitative and Quantitative Methods

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Meatballs are a food that has fans of various ages, from small children to adults. Currently, meatballs containing borax are very widespread on the market. Borax is added by manufacturers because it can function as a preservative and improve the texture of food. However, borax is a substance that is prohibited from being used in Indonesia because it can cause various diseases, such as central nervous disorders and disorders of the liver. Bantaeng sub-district is one of the sub-districts in Bantaeng District, South Sulawesi Province. Based on the results of observations, meatballs are quite popular with the people of Bantaeng sub-district. This is because there are many permanent meatball stalls that are frequently being visited by consumers.

This study aims to qualitatively and quantitatively analyze the borax content in meatballs sold at permanent meatball stalls in Bantaeng sub-district. The sampling technique used is random sampling, which is a type of probability sampling in which everyone in the entire target population has the same chance of being selected. The population in this study was all permanent meatball stalls in Bantaeng sub-district. While the sample used is permanent meatball stalls that are the best-selling or the most crowded in Bantaeng sub-district.

Qualitative analysis was carried out using the decomposition test, flame test, and turmeric paper test. The decomposition test is a test to observe whether there is a physical change in the meatball samples during the 3-day storage period. Parameters observed in the decomposition test included appearance, color, smell, and texture. The flame test is carried out to identify the presence of borax compounds by producing a greenish flame color if it is positive for borax compounds. While the turmeric paper test is a test using turmeric paper from turmeric extract. Turmeric extract can be used as a borax detector because it contains curcumin. The curcumin compound can decompose borax bonds into boric acid and bind it to a rose-colored complex (brownish-red), commonly called the borocyanine curcumin complex. So if it is positive for borax, the turmeric paper will turn brownish-red. Based on the results of the qualitative analysis, the five samples analyzed showed negative results for the three tests.

A quantitative analysis was carried out to determine quantitatively how much borax was contained in the meatball samples. Quantitative analysis was carried out using the acid-base titration method. Hydrochloric acid (HCl) solution will react with borax (Na2B4O7.10H2O) to form boric acid (H3BO3). This boric acid will react with sodium hydroxide (NaOH) to produce sodium metaborate (NaBO2) in the form of a clear, colorless solution. So it is necessary to add phenolphthalein as an indicator so that it can be visually observed to give rise to a pink color. The results of the quantitative analysis showed that there was one sample containing borax, but with a very small concentration of 0.0095%. Because this level is very small, close to zero, when tested qualitatively, it cannot be detected.

Keywords: Bantaeng sub-district, meatballs, borax, qualitative analysis, quantitative analysis.