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Extending Shelf-Life of Soy Sauce Using Acetic Acid as Non-Feed Additives

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Abstract

Soy sauce, a processing product of soy, is a traditional food recipe in Cambodian cuisine. Acidic flavour and shelf-life of soy sauce is normally increased by the addition of acid sulphuric. Seeing the fatal problem and food safety risk of using this additive, acetic acid can be an alternative option. This experiment aimed at optimising the level of acetic acid to be added in soy sauce to extend shelf-life of soy sauce.

The process of making soy sauce was to toast, grind, and boil full-shape soy bean with HCl (15 %), and then de-acidify the sample with NaCO₃. After stirring and filtering process, the liquid material was boiled and added with 4, 6, and 8 % of acetic acid in respective to the treatment level. After storing for 3 days, soy sauce was pasteurised and packaged. The pH value, acidity, protein, and the sensory testing of soy sauce in these 3 treatments were collected after 15 and 30 days of storing.

On the 30th day, the pH values among treatments were 4.8, 4.6, and 4.5 respectively. The acidity of soy sauce was 1.9, 2.5, and 3.6 % in treatment 1, 2, and 3 respectively ($p < 0.05$). It was observed no significant difference in protein level among treatments. Using up to 8 % of acetic acid in soy sauce resulted in no adverse affect on its acidic flavour. Soy sauce in treatment 1, 2, and 3 were scored 3.0, 3.5, and 3.6 on 5 for the general consumer preference respectively. No significant difference in odour, colour, and liquidity of soy sauce among groups was observed. Storage period from 0-30 days had no effect on the tested variables.

Using up to 8 % of acetic acid provided a high value of consumer preference. Increasing the amount of acetic acid has no effect on shelf-life extension of soy sauce. Further research should be carried out to determine the optimum amount of acetic acid to be added to soy sauce.

Keywords: Non-feed additives, soy sauce