

Sopida Suebwongsa 2007: Development of Rice Noodles for Sterilisation and Application in Chicken Stir-Fired Noodles. Master of Science (Food Science), Major Field: Food Science, Department of Food Science and Technology. Thesis Advisor: Mr. Anukul Wattanasuk, Ph.D. 165 pages.

Rice noodles in cans and retort pouches are sterilised products. The sterilisation process may cause texture quality changed. In this study, the modified starch (cross-linked rice starch or cross-linked tapioca starch) was added to Leuang 11 rice flour (L-11) to improve heat resistant quality of rice noodles during sterilisation. The pasting properties of rice flour and two type of cross-linked starch were determined by using Rapid Visco Analyzer (RVA), it was found that the cross-linked starch had more temperature resistance than L-11 rice flour. The photographs from light microscope at 95 °C indicated that the cross-linked starch had granules integrity more than L-11 rice flour. The pasting properties of rice flour and rice flour mixed with cross-linked starch were determined, the results showed that paste of rice flour mixed with cross-linked starch had breakdown value less than paste of L-11 rice flour alone. It is revealed that rice flour mixed with cross-linked starch had increased heat resistance property. Studying the effect of rehydration time on firmness quality of rice noodles after sterilised at 121 °C for 15 mins, the result showed that the noodles rehydrated in hot water for 3 mins and 5 mins had higher moisture content than the noodles rehydrated for 1 mins. The higher moisture content corresponded to the lower firmness quality of rice noodles. Studying the effect of adding modified starch on firmness quality of sterilised noodles, it was found that adding cross-linked starch displayed a tendency to increased the firmness, except the noodles prepared from L-11 mixing with 6% cross-linked tapioca starch, the firmness was similar to noodles prepared from L-11 alone ($p > 0.05$). The sensory evaluation determined by Quantitative Descriptive Analysis (QDA) revealed that rice noodles rehydrated for 3 mins had whiteness, firmness, stickiness and springiness similar to noodles which rehydrated for 5 mins. Studying the sterilised temperature, it was found that sterilisation at 121 °C for 18 mins ($F_0 = 8.44$ mins), the noodles had a higher firmness than sterilisation at 116 °C for 30 mins ($F_0 = 7.31$ mins). The sensory evaluation determined by QDA revealed that all noodles sterilised at 121 °C had higher whiteness, stickiness and springiness than noodles prepared from L-11 alone and sterilised at 116 °C ($p \leq 0.05$). Noodles prepared from L-11 mixed with 3% cross-linked tapioca starch was chosen to made chicken stir-fired noodles in cans and retort pouches. Noodles was rehydrated for 3 mins and sterilised at 121 °C, it was found that the sterilised time of pouches is less than cans about half time, when the F_0 value is 7.41 mins and 7.58 mins respectively. For microbial examination, all samples are safe. When study the product stability at room temperature, 35 °C and 45 °C for 12 weeks, the results were found that all samples had stable quality of moisture content and firmness. From the sensory evaluations determined by 9-point hedonic test, the consumers still liked the products which store at room temperature, as liked the appearance, color, taste and the overall preference at level of like slightly to like moderately.

Student's signature

Thesis Advisor's signature