

Comparison Conventional with Microwave-Assisted Drying Method on the Physicochemical Characteristics of Rice Bran Noodle

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Abstract : For longer shelf life of noodles, air-dried method is the traditional way for the noodle preparation. Microwave drying has the specific advantage of rapid and uniform heating due to the penetration of microwaves into the body of the product. Microwave-assisted facility offers a quick and energy saving method during food dehydration as compares to the conventional air-dried method. Recently, numerous studies in the rheological characteristics of pasta or spaghetti were carried out with microwave-assisted air driers and many agricultural products were dried successfully. There are few researches about the evaluation of physicochemical characteristics and cooking quality of microwave-assisted air dried salted noodles. The purposes of this study were to compare the difference between conventional and microwave-assisted drying method on the physicochemical properties and eating quality of rice bran noodles. Three different microwave power including 0.5 KW, 0.75 KW and 1.0 KW installing with 50°C hot air were applied for dehydration of rice bran noodles in this study. Three proportion of rice bran ranging in 0-20% were incorporated into salted noodles processing. The appearance, optimum cooking time, cooking yield and losses, textural profiles analysis, sensory evaluation of rice bran noodles were measured in this study. The results indicated that high power (1.0 KW) microwave facility caused partially burnt and porous on the surface of rice bran noodles. However, no characteristic of noodle was appeared on the surface of noodles preparing by low power (0.5 KW) microwave facility. The optimum cooking time of noodles was decreased as higher power microwave or higher proportion of rice bran was incorporated into noodles preparation. The higher proportion of rice bran (20%) or higher power of microwave-assisted dried noodles obtained the higher color intensity and the higher cooking losses as compared with conventional air dried noodles. The firmness of cooked rice bran noodles slightly decreased in the cooked noodles which were dried by high power microwave-assisted method. The shearing force, tensile strength, elasticity and texture profiles of cooked rice noodles decreased with the progress of the proportion of rice bran. The results of sensory evaluation indicated conventional dried noodles obtained the higher springiness, cohesiveness and acceptability of cooked noodles than high power (1.0 KW) microwave-assisted dried noodles. However, low power (0.5 KW) microwave-assisted dried noodles showed the comparable sensory attributes and acceptability with conventional dried noodles. Moreover, the sensory attributes including firmness, springiness, cohesiveness decreased, but stickiness increased, with the increases of rice bran proportion. These results inferred that incorporation of lower proportion of rice bran and lower power microwave-assisted dried noodles processing could produce faster cooking time and acceptable quality of cooked noodles as compared to conventional dried noodles.

Keywords : microwave-assisted drying method, physicochemical characteristics, rice bran noodles, sensory evaluation

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