

Study of White Salted Noodles Air Dehydration Assisted by Microwave as Compared to Conventional Air Dried Process

Authors : Chiun-C. R. Wang, I-Yu Chiu

Abstract : Drying is the most difficult and critical step to control in the dried salted noodles production. 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 for the noodle preparation. Recently, numerous studies in the rheological characteristics of pasta or spaghetti were carried out with microwave-assisted and conventional air driers and many agricultural products were dried successfully. There is very few research associated with 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 air and microwave-assisted air 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, and 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 significant difference of noodle was appeared on the surface of noodles between low power (0.5 KW) microwave-assisted salted noodles and control set. The optimum cooking time of noodles was decreased as higher power microwave was applied or higher proportion of rice bran was incorporated in the preparation of salted noodles. 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. Meanwhile, the higher power of microwave-assisted air dried noodles indicated the larger air cell inside the noodles and appeared little burnt stripe on the surface of 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 overall 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 in the salted noodles. 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 more acceptable quality of cooked noodles as compared to conventional dried noodles.

Keywords : white salted noodles, microwave-assisted air drying processing, cooking yield, appearance, texture profiles, scanning electrical microscopy, sensory evaluation

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