Quality and fortificant retention of rice noodles as affected by flour particle size

ABSTRACT

Rice noodles, which are widely consumed noodles in Southeast Asia, were evaluated as a potential carrier for fortificants such as vitamin A, folic acid, and iron. Because flour particle size was found to affect the noodle properties, this study was conducted to investigate the effect of five different particle sizes (<63, 80, 100, 125, and 140 µm) of dry-milled rice flour on the cooking quality, microstructure, texture, and sensory characteristics of the rice noodles. The retention of fortificant in the noodles at every stage of processing as affected by the flour particle size was also determined. It was found that the rice noodles produced from flour with the smallest particle size studied ($\leq 63 \mu m$) had the best quality and were the most liked by the consumers. In addition, the noodles had the most compact and regular structure, which could be attributed to having the most severely gelatinized starch. This starch would have caused the least leaching of the fortificant into the surrounding water during the boiling stage of the rice noodle processing. Retention of iron in the cooked fortified rice noodles prepared from flour with the smallest particle size was high at around 87%, whereas that of vitamin A and folic acid were below 15%. Because the losses of the fortificant from the rice noodles were mostly owing to the boiling process, further improvements of the rice noodle processing conditions are required for reduction of the vitamin losses.

Keyword: Rice noodles; Flour particle size; Fortificant retention