EFFECTS OF VARIOUS IRON FORTIFICANTS ON SENSORY ACCEPTABILITY AND SHELF-LIFE STABILITY OF INSTANT NOODLES

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Background. Iron-deficiency anemia is the most common nutritional problem in Thailand and many developing countries. One of the most sustainable and cost-effective strategies for combating iron deficiency is fortification of staple foods with iron.

Objective. In this study, the feasibility of fortifying instant noodles with different forms of iron fortificants (ferrous sulfate [FS], ferric sodium ethylenediaminetetraacetic acid [NaFeEDTA], and encapsulated H-reduced elemental iron [EEI] was evaluated, and the fortified noodles were compared with unfortified noodles for changes in physical, chemical, and sensorial qualities.

Methods. Wheat flour used to make instant noodles was fortified to produce a concentration of 5 mg of iron per 50-g serving of instant noodles (one-third of the Thai recommended dietary intake).

Results. Analytical data showed that the iron contents were close to 5 mg per serving of noodles fortified with FS, NaFeEDTA, or EEI (5.27 +/- 0.10, 4.27 +/- 0.071 and 5.26 +/- 0.47 mg, respectively). The color quality (measured by L*, lightness, and b*, yellowness) of the raw dough sheet and of uncooked and cooked instant noodles fortified with FS was lower than that of the unfortified, but color quality was not changed by the addition of NaFeEDTA. The overall sensory acceptability scores of unfortified and fortified noodles were about 6 ("like slightly"). No metallic odor was observed. During 3 months of storage at room temperature, the iron fortificants did not affect the peroxide level, color, or sensory qualities of the product.

Conclusions. Iron fortification of wheat flour used to make instant noodles is feasible. NaFeEDTA is the preferred fortificant because of its nonsignificant effect on the color and sensory quality of the products.