

ABSTRACT

Deficiency of micronutrients has become a crucial problem in the world, mainly in children and pregnant women, leading to the increasing risk of infectious diseases, maternal and children mortality as well as intelligence decrease. Therefore, food fortification is developed as one of the intervention programs to prevent and reduce nutrient inadequacy, which could be applied to various food products, including cookies as a commonly consumed snack food. This study aimed to fortify cookies with micronutrients premix in three different concentrations (0, 100, and 120%) to evaluate its effects on the micronutrient stability, physicochemical characteristics, and sensory acceptance of the fortified cookies. The cookies were analyzed for vitamin C and iron using HPLC-UV Vis and ICP-MS equipment respectively. Colorimeter, texture analyzer, and caliper were utilized to analyze physicochemical properties, whilst 50 panelists evaluated the sensory acceptance by 9-point hedonic scale. Iron content was the highest in T3 dough and cookies (21.55 ± 3.18 and 16.06 ± 6.82) compared to T1 and T2 ($p<0.001$ and $p=0.078$), while there were no significant differences on micronutrient retention ($p>0.05$). The yellowness of T3 (45.94 ± 1.08) and T2 (44.62 ± 0.77) were significantly higher compared to T1 (40.80 ± 0.66), $p=0.001$. Premix concentration significantly increased texture of T2 and T3 compared to T1 ($p<0.001$). Diameter of T2 cookies was significantly higher compared to T1 and T3 ($p=0.009$). All cookie formulations were slightly liked by participants without having significant difference among formula. In conclusion, micronutrient fortification may increase micronutrient content and affect the physical properties of cookies, while well-accepted by the panelists.

Keywords: *Micronutrients deficiency, Food fortification, Fortified cookies, Micronutrients retention*