

Utilization of Sorghum and White Bean Flour for the Production of Gluten Free and Iron Rich Cookies

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Abstract : The aim of this study is to find innovative approaches for the production of iron rich foods using natural iron sources. The vehicle used for fortification was sorghum whereas the iron fortificant was white bean. Fortified sorghum cookies were produced from five different mixtures; iron content, iron bioavailability, cookie texture and acceptability were measured. Cookies were prepared from the three fortified flours; 90% sorghum + 10% white bean (S9WB1), 75% sorghum + 25% white bean (S3WB1), 50% sorghum + 50% white bean (S1WB1) and 100% sorghum and 100% white bean. The functional properties gave good results in all the formulations. Statistical analysis of the iron content in the five different cookies showed that there was significant difference at the 95% confidence level (ANOVA). The iron content in all the recipes including the 100% sorghum improved, the increase ranging from 112% in 100% sorghum cookies to 476% in 100% white bean cookies. This shows that the increase in the amount of white bean used for fortification leads to the improvement of the iron content of cookies. The bioavailability of iron ranged from 21.3% in 100% sorghum to 28.6% in 100% white bean cookies. In the 100% sorghum cookies the iron bioavailability increased with reference to raw sorghum due to the addition of eggs. Bioavailability of iron in raw sorghum is 16.2%, therefore the percentage increase ranged from 5.1% to 28.6%. The cookies prepared from 10% white bean (S9WB1) scored the lowest 3.7 in terms of acceptability. They were the least preferred due to their somewhat soft texture. The 30% white bean cookies (S3WB1) gave results comparable to the 50% (S1WB1) and 100% white bean cookies. Cookies prepared with high percentage of white bean (50% and 100% white bean) gave the best results. Therefore cookie formulations from sorghum and white bean are successful in improving the iron status of anaemic individuals.

Keywords : sorghum, white bean, iron content, bioavailable iron, cookies

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