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UTILIZATION OF SWEET POTATO STARCH, FLOUR AND FIBRE IN BREAD AND BISCUITS: PHYSICO-CHEMICAL AND NUTRITIONAL CHARACTERISTICS.

by

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SUMMARY

UTILIZATION OF SWEET POTATO STARCH, FLOUR AND FIBRE IN BREAD AND BISCUIT: PHYSICOCHEMICAL AND NUTRITIONAL CHARACTERISTICS.

Sweet-potato contains a limited amount of protein, although rich in dietary fibre content and carbohydrate, so a successful combination with wheat flour for bread and biscuit production would be nutritionally advantageous. In particular, the role of these ingredients in relating to acceptability of breads and biscuit with higher percentage of sweet potato starch, flour in wheat flour. In this study, starch, flour and residue fibre of three sweet-potato varieties (red, orange and white -types) were studied. The 5-10% combination levels for biscuit-making were found to be acceptable, without affecting the quality of the biscuit (combination of texture and biscuit size). In bread, bread containing 15% red and white replacement starches and orange replacement flour was found to be acceptable level, without affecting the quality of the bread, in an attempt to replace wheat at higher per cent level. The physicochemical study was complemented with a nutritional study to determine beneficial effects of food rich in dietary fibre and starches, in the context of improving diet related problems. RVA results showed sweet-potato ingredients affected differently the pasting temperature, peak viscosity and final viscosity of the normal wheat flour (p<0.05). Fibre inclusion showed large reduction in viscosity and swelling of sweet potato starch. Biscuits and breads containing sweet-potato starch and flour are low in amylose, and digest slowly because of lowly oriented and ‘crystalline’ areas within the granules enable to swell or to ungelatinised starch granules, whereas wheat control biscuit was able to gelatinised starch and exerted a greater effect upon digestibility. There are many other factors that need to be considered when analysing the in vitro starch digestibility such including amylose content, amylopectin structure and presence of fibre and gelatinising. Sweet-potato starch, flour and fibre addition show least effect on bread texture and size and starch, flour and fibre replacement. However, in in vitro starch digestibility test higher values RSS was recorded for starch addition followed by flour addition.
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