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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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A thesis submitted in partial fulfilment of the
requirements for the degree of

Master of Technology in Food Technology

Massey University

2008

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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Acknowledgements

There are people whom I would like to thank who helped me in various stages of completing this thesis.

- Charles Brennan-- my supervisor. Thank you for providing knowledge into the world of starch for which I have had no previous knowledge to any great detail. Thank you also for showing me how to use the various pieces of equipment required.
- New Zealand Development Agency (NZAID)-- my sponsor. Thank you for giving me extra time for completing my thesis. Thank you for providing much needed support and commitment.