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Effect of fermentation and legumes flour incorporation on the Structural properties of cassava starch (*Manihot esculenta*)

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INTRODUCTION & AIM

The problems associated with wheat consumption have sparked a great deal of interest into developing and utilisation of gluten-free flours and derived products [1]. Is the case of sour cassava starch which have an exceptional bread-making ability [2]. The aim of this study was to evaluate the influence of fermentation time, varietal difference, and legume flours (*Arachis hypogaea* and *vigna unguiculata*) incorporation on the structural modifications of cassava starch granules.

METHOD

Manihot esculenta

fermentation and solar drying

Sour cassava starch

In association with

Arachis hypogaea, Vigna unguiculata, and Glycine max

Structural,molecular and morphological modification

Starch molecular analysis using Fourier transform infrared spectroscopy (FTIR).[3]

Crystallinity determination using X-ray diffraction (XRD) [4]

morphological analysis by scanning electron microscope (SEM)[5].

RESULTS & DISCUSSION

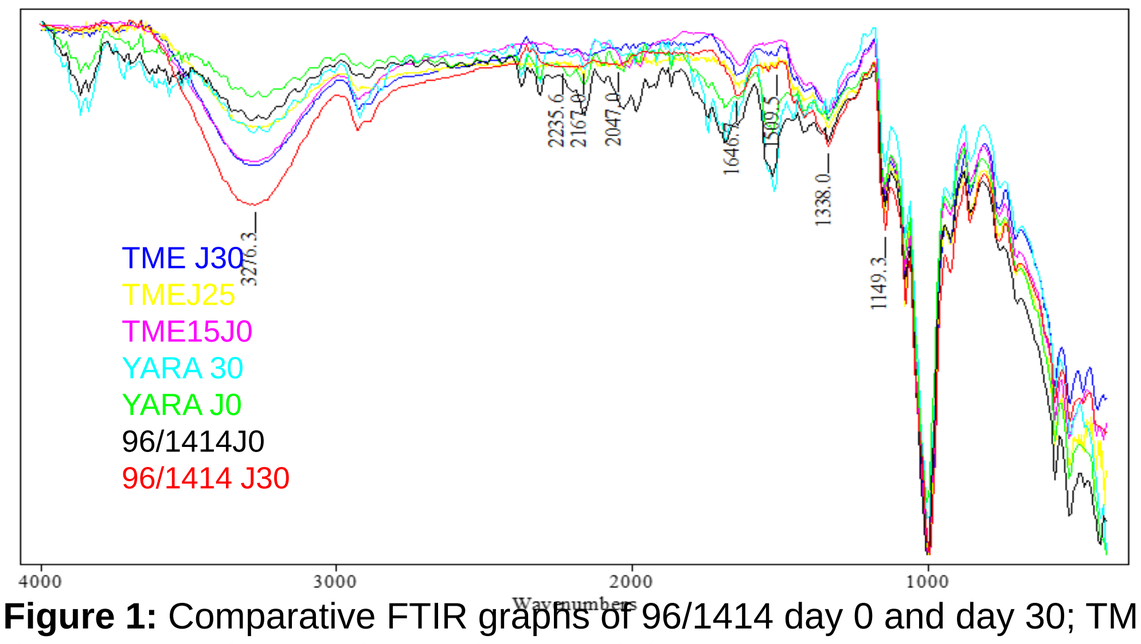


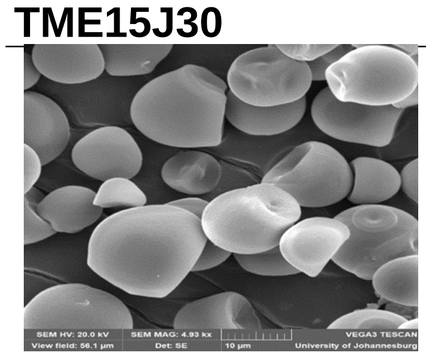
Figure 1: Comparative FTIR graphs of 96/1414 day 0 and day 30; TME15 day 0, 25, and 30; and Yara day 0 and day 30.

Table 1: Starch crystallinity

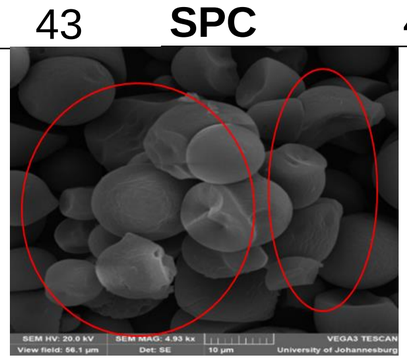
Genotype	%
96/1414J0	47
YARAJ0	45
TME15J0	44
96/1414J30	44
YARAJ30	41
TME15J30	43

Table 2: Starch and spc crystallinity .

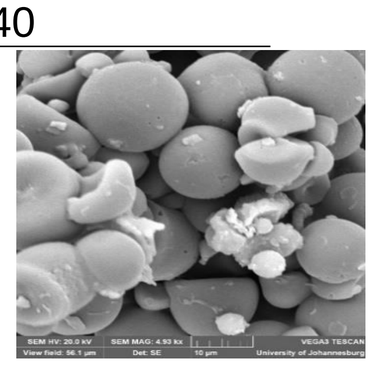
Genotype	%
96/1414	44
Cowpea	35
Peanut	43
SPC	40



Native starch



Modified starch



SPC flour

CONCLUSION

This study suggests that genetic variation, fermentation, and solar irradiation, as well as the incorporation of legumes, had an impact on the structural properties of cassava starch which in turn affect the morphological, rheological and bread-making properties.

FUTURE WORK / REFERENCES

1.Cenni, S., Sesenna, V., Boiardi, G., Casertano, M., Russo, G., Reginelli, A., Esposito, S., and Strisciuglio, C. (2023)

2.Alvarado, P.G.M. (2014)

3. Altomare, A., Corriero, N., Cuocci, C., Falcicchio, A., Moliterni, A., and Rizzi, R. (2015)

4. Adebo, O. A., Njobeh, P. B., Adebiyi, J. A., & Kayitesi, E. (2018).