The low alcohol beer had higher antioxidant activities than Baltica beer which has a health benefit to the consumer.

The present study has provided information on the use of *S. cerevisiae, L. plantarum* as starter cultures for the production of sorghum beers and production of low alcohol beer using *Saccharomycodes ludwigii*. It is recommended to use S. *cerevisiae* alone as a starter culture to produce *Pito* beer having the good organoleptic characteristics. It has contributed to the production of low alcohol beer, which is useful to drivers, sportsmen, machine operators, and pregnant women also to people under medication who are addicted to beer.

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APPLICATION OF FERMENTATION FOR EXTRACTION OF ISOFLAVONES FROM SOY MOLASSES

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Soy molasses is a by-product obtained from the production of soy protein concentrate. It is a rich source of fermentable sugars and isoflavones(Daidzein, genistein and glycitein). Isoflavones are the main bioactive constitute of soybean showing numerous health benefits [1]. Extraction of these compounds for pharmaceutical use remains a major challenge for researchers. Many techniques have been employed by researchers like the conventional Soxhlet technique, supercritical fluid extraction, ultrasound assisted extraction. The use of less equipment, organic solvents and high yield remain a major challenge for extraction of isoflavones. This work is aimed to using fermentation technique of soy molasses by *Saccharomyces cerevisiae* for extraction of isoflavones and also comparing the extractability with conventional method of extraction.

Conventional method of extraction was carried out by weighing out 10g of soy molasses and adding 100ml of ethyl acetate –water solution (90 ml distilled water and 10 ml ethyl acetate).The mixture was allowed to stand at different temperature and extraction time. The mixture was centrifuged, washed with petroleum ether, evaporated and dissolved in ethanol prior analysis using Gas Chromatography Mass Spectrometry (GC/MS). The Gas chromatogram of the extract is shown in Fig.1. 3 types of isoflavones such as daidzein, genistein and glycitein have been identified.

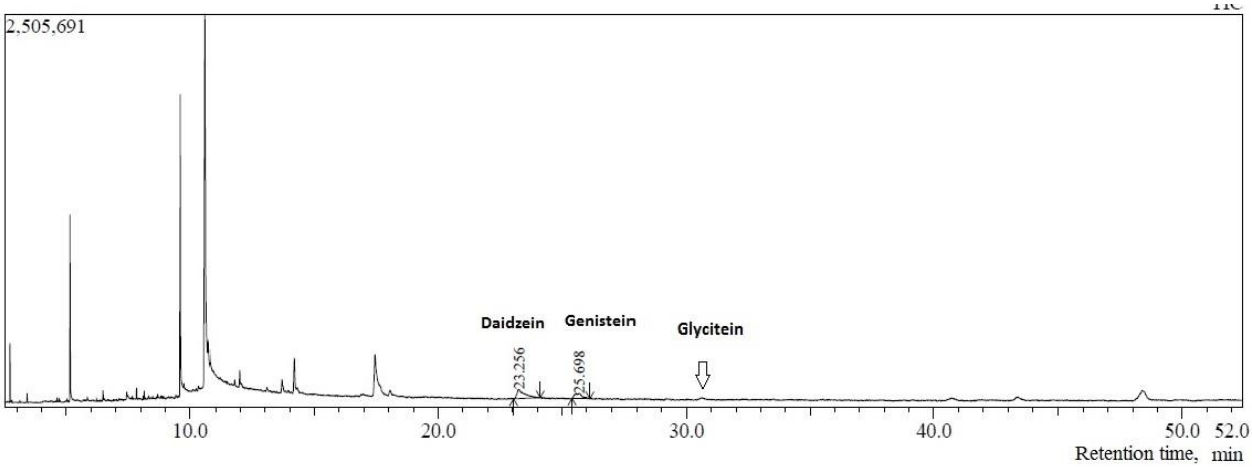

Fig.1. Gas Chromatogram of soy molasses extract by conventional method

The fermentation of soy molasses was carried out as described by [2] with little modification. 500ml of distilled water was added to 100 g of soy molasses and the mixture mixed vigorously. 2g of *Saccharomyces cerevisiae* was autolyzed and inoculated to the soy molasses solution. The mixture was incubated at 30°C and allowed to ferment for until CO_2 liberation was over. The residual solid was collected and dried in oven for 3 days at 60 °C. The solid residue was extracted using ethanol.

Total flavonoid content determination was carried out using 2, 4 dinitrophenylhydrazine (2, 4 – DNPH) colorimetric method. The isoflavones components of the soy molasses extract were identified base on their mass spectra.

Total isoflavones recovery was directly related to extraction time and temperature. Highest isoflavones extract was obtained at 60 mins extraction time and 60 °C while the least at 20 mins extraction time and 20 °C .There was also higher yield of isoflavones using the fermentation technique compare with conventional method.

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