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Development of a beer using malted finger millet as carbohydrate source

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Finger millet is a cereal which is abundant in Sri Lanka, and which also has the potential for formulating products with modifications in processing. Previous studies have shown that it has a considerable amount of α -amylase and free amino nitrogen (FAN). The present study was done on the potential of finger millet as a substrate for brewing beer. Finger millet variety "Oshada" was used in the study. Batch samples (0.1 kg) were kept soaked in water for 24 hours after treating with 0.1% CaCl_2 . Water was changed regularly every 6 hours. Soaking studies showed a moisture change from $12.2 \pm 0.28\%$ up to $36.5 \pm 0.14\%$ on wet basis after 24 hours, when saturation occurs. The seeds were allowed to germinate at room temperature with a trace amount of surface moisture (high watering regime) until 48 hours. Malting studies indicated that the steeping loss, metabolic loss and vegetative loss were $1.023 \pm 0.16\%$, $2.87 \pm 0.24\%$ and $1.68 \pm 0.42\%$, respectively. Malted seeds were taken and kilned at 50°C for 2 hours to arrest the germination. The drying process showed reduction of moisture from 36.5% up to $5.8 \pm 0.28\%$ on wet basis. Then the dried millet was ground and sieved. The resultant malt was tested for free sugar content, which showed an increase from 0.9% to 3.9%, and a reduction of starch from 68.2% to 55.3%.

Fermentation yielded 7% of alcohol after 5 days which was diluted to 4.4% in the formulation of the final beverage. Physicochemical parameters were also tested in the study, which showed some resemblance to commercial beers. The resultant beverage had acceptable sensory properties and a good shelf life. This study also showed that finger millet has the potential to be used as an alternative malt or barley malt extender in brewing.

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