

## **Development of a methodology for production of fruit vinegar using fruit wastes**

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In Sri Lanka, it has been estimated that approximately 390,000 tons of fruit and vegetables are lost during postharvest operations. Moreover 1 MT of fruits and vegetable are dumped as a garbage at Thabuththagama economic centre per day. Hence this research was undertaken with the objective of optimizing the usage of fruit wastes disposed by the Thambuththegama Economic Center and Anuradhapura market by developing fruit vinegar.

Field survey was conducted to find out the amount of each fruit disposed at Thambuththegama Economic Center and Anuradhapura market for 2 weeks period and one type of fruit, which showed the highest loss, was selected to develop vinegar.

Disposed over ripe banana (variety: *Ambul*) was selected to produce vinegar and transported from Anuradhapura market to the laboratory at IPHT. In the first stage of the research, peeled and unpeeled banana were chopped and pulped. The required brix value of the pulp was obtained by adjusting the water and sugar content. The effect of peel on production of ethanol was tested by monitoring the ethanol production during anaerobic fermentation after adding the yeast. The second experiment was conducted to optimize the production of acetic acid and effect of corn cobs, wood shaving and mother culture in accelerating the production of acetic acid was tested. The acceptability of the developed product was tested by measuring the physico-chemical properties of density, color, ethanol concentration, titratable acidity and brix value compared to the commercial coconut vinegar. The sensory evaluation was also conducted to evaluate the developed product organoleptically.

The use of peeled banana was effective to develop 10-11% ethanol concentration, 7-10 days after first fermentation while addition of 20% mother culture facilitated the acceleration of vinegar production process. The results revealed that banana waste could be successfully used to prepare fruit vinegar and commercial coconut vinegar can be replaced by the developed banana vinegar.