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Vinegar production from industrial waste of pineapple

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Vinegar is used in the cooking process to preserve the food and impart flavor and taste. Vinegar shows medicinal properties and physiological effects such as invigoration, regulation of blood pressure, regulation of diabetes mellitus, stimulation of appetite, digestion and absorption of calcium. Pineapple (*Ananas comosus* L.) is one of the important economic crops in Sri Lanka. However, pineapple peel (41% of whole fruit) is usually discarded during processing. The present study was conducted to produce vinegar from industrial waste of pineapple peel (Mauritius variety) through a biotechnological process. The extracted juice was treated with sulphite for removal of tannin. Sugar level and pH was adjusted to 16 brix and 4, respectively. Tanin untreated sample was prepared using the above same sugar and pH levels. Initially, alcoholic fermentation was done with *Saccharomyces cerevisiae* and after the third day acetic acid fermentation was started with *Acetobacter aceti* with continuous aeration. On the 12^{th} day the acidity level reached 4.01 ± 0.01 g/100 mL. Acetic acid and samples were pasteurized to obtain the final product. Sensory evaluation was carried out using commercially available coconut vinegar to find the overall acceptability of pineapple peel vinegar. The results showed that there was no significant difference ($P < 0.05$) between the three samples i.e. tannin treated vinegar, tannin untreated vinegar and commercial vinegar. However, the panelist preferred the taste of tannin untreated vinegar. Brix value, pH, and % acidity of the final product are 1.40 ± 0.01, 2.80 ± 0.01, and 4.01 ± 0.01 respectively. These values were compatible with SLSI standards. Aerobic plate count was less than thirty for 10^{-1} dilution (1 CFU/mL in 10^{-1} dilution). It confirmed the safety of the product. It can be concluded that industrial waste pineapple peel can be used to produce vinegar successfully within a two-week period. The process is environmental friendly and assists in reducing industrial wastage while producing a value added product.

Keywords: Fermentation, pineapple peel waste, tannin, vinegar

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