

## **Isolation and identification of acetic acid bacteria from toddy to produce vinegar without using a fermentor**

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The aim of this study was to produce vinegar without using a high cost submerged fermentor which is used in mass scale industries, by isolating and identifying Acetic Acid Bacterial (AAB) species from toddy that yield a high acetic acid concentration to produce vinegar. In the experiment, from coconut toddy samples AAB were isolated using Carr's Ethanol medium. From the preliminary screening, 06 Gram negative bacterial isolates produced yellow colorization around the colonies that indicated the acetic acid production. Motility and endospore staining also were carried out. Furthermore, biochemical characterization of the 06 bacterial isolates resulted *Acetobacter aceti*, *Acetobacter xylinus*, *Gluconobacter hansenii* and *Gluconobacter liquefaciens*. Two isolates were identified as *A. aceti* strains. Isolates were tested for acetic acid productivity, ethanol tolerance, temperature tolerance and acetic acid tolerance. Isolate 05 (*Acetobacter aceti*) was the most potent strain. 5ml of ethanol-yeast extract medium (ethanol 5%) fermented by isolate 05 was titrated against NaOH in 2 day intervals resulted an acetic acid concentration starting from 0.72% and increased up to 5.62% within 14 days of shaking incubation. It was able to grow at temperatures of 30°C, 37°C, 40°C, was able to tolerate ethanol concentrations of 4-10% and remained viable at acetic acid concentrations of 2-4%. This organism was able to produce vinegar of 5.62% acetic acid concentration under low cost conditions without the fermentor which can be modified in to a mass scale vinegar producer.

**Keywords:** Acetic Acid Bacteria, toddy, *Acetobacter*, fermentor, vinegar

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