

TODDY: AUTHENTIC OR ADULTERATED HOW DO WE KNOW ?

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The coconut sap, an exudate obtained by 'tapping' the unopened inflorescence of the coconut palm, is the major raw material used in the manufacture of alcoholic beverages in Sri Lanka. The sap is a brownish clear liquid, containing 14 to 18 percent (w/v) sugars mostly in the form of sucrose. The coconut sap oozing out of the treated inflorescence is traditionally collected in earthenware pots and allowed to ferment in open pots for varying lengths of time. During this period, microorganisms from the atmosphere contaminate, multiply in the sugary liquid, and finally transform the raw material into various products, mainly alcohol. The resulting solution containing about 7 percent (v/v) ethyl alcohol is either consumed directly as toddy or distilled to obtain the spirit, arrack.

The State Distilleries Corporation at Seeduwa usually obtains toddy from contractors in the Chilaw area and they are paid on the content of pure toddy. There have been several complaints with respect to adulterated toddy received from contractors and there is a rumor that boiled rice water is being added in preparing such toddy. Therefore, the problem of adulterated toddy has to be solved and necessary steps have to be taken to prevent such sub-standard toddy entering the market. Boiled rice water contains a considerable amount of starch and there is an well-accepted simple biochemical assay that can be used to test toddy samples for the

presence of starch (even in minute quantities).

Detection of starch in toddy:

- (a) Boil 1.0 ml of partly fermented toddy sample, with sediments.
- (b) Cool the sample and add 1.0 ml of an aqueous solution containing 0.2% Iodine and 0.4% Potassium Iodide (I_2/KI reagent).
- (c) Compare the colour development using analytical grade starch as the control.

Any adulterated toddy sample usually gives a deep blue colour with I_2/KI solution, which is detectable in the spectrophotometer. Therefore, a sample of genuine toddy can be easily identified from an adulterated toddy sample by the intensity of blue colour developed after I_2/KI test.

Some of the suspicious toddy samples were collected from Marawila and Mahawewa area, and analysed for starch using the above assay. Most of the toddy samples gave a light blue colour. Samples that were collected from a new inflorescence gave a yellowish gray colour. These results clearly indicated that these were pure toddy samples.

Starch is not a component of toddy. But I_2/KI reagent may give a light blue colour with toddy samples due to the increasing microbial population

present in the sample. The quality of fermented sap can vary depending on the microorganisms active in the pot and the climatic factors. Further, the microorganisms have the potential of producing many chemical compounds in addition to Ethanol. Therefore, there is a tendency of giving various colours such as reddish purple and light blue with the presence of amylopectins and amyloses, respectively. Light blue colour of the above toddy samples was solely due to the presence of microorganisms introduced from the environment. The samples were further tested microscopically to confirm the results. Following addition of I_2/KI reagent, the

above toddy (genuine) samples were diluted, mounted on a microscopic slide and photographed using a light microscope with a camera attachment. It was observed that yeast cells were present in the solution and their walls were stained blue due to the presence of cell wall polysaccharides. Hence it can be concluded that an adulterated toddy sample gives a deep blue colour with I_2/KI reagent due to the presence of starch and it is detectable in the spectrophotometer whilst a genuine toddy sample gives a light blue or gray colour due to the presence of microorganisms (wild yeast).
