

Determination of antioxidant activity, phenolic content and pH in wine prepared from local beet

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Beetroot (*Beta Vulgaris*) is a vegetable containing high amounts of biologically active compounds such as antioxidants, and polyphenols. It also contains vitamin C, fiber, inorganic nitrogen and anthocyanin, which have various health benefits. In this study, wine was prepared by fermenting beet, and the antioxidant activity, pH and total phenolic content of the wine was determined.

Beetroot (500 g) was weighed, washed, peeled and cut into small pieces after which they were blended and beet pulp was obtained. Deionized water was boiled and cooled to 35-40 °C. The beet pulp was placed batch wise on cheesecloth and squeezed. About 250 ml of the juice was collected into a measuring cup. 100 ml of previously boiled and cooled DI water was added to the pulp, and another 250 ml of juice was collected by filtering the pulp again. The two extracts were combined. 1g of yeast was added to 200 ml of previously boiled lukewarm DI water, and kept for 20 minutes. Thereafter, it was added to the beet juice and total volume was made up to 300 ml by adding boiled and cooled DI water. The beet juice and yeast were transferred to glass bottles that were previously washed and autoclaved, and kept in a dark place for 2 weeks to ferment.

Antioxidant Assay was carried out and Total Phenolic Content was determined. BHT (25 mg) was dissolved in methanol to prepare a stock solution (1.0 mg/mL) thereafter which a series of standard solutions were prepared. The solutions were kept in the dark for 10 minutes at room temperature. A solution of 0.08 mg/mL 2,2-Diphenyl-1-picrylhydrazyl (DPPH) was prepared in methanol. The absorbance at 517 nm was measured using a UV visible spectrometer with methanol as the blank. 2.5 mL of stock wine was diluted to 25 mL in a volumetric flask with deionized water. 1.5 mL of diluted beet wine was mixed with 2 mL DPPH and 0.5 mL methanol. Deionized water was used as the blank. Absorbance was measured at 517 nm and the % inhibition was calculated. Total Phenolic Content was determined as gallic acid equivalents (GAE). 1 mL of beet wine was diluted to 10 mL with deionized water. 0.5 ml Folin-Ciocalteu reagent was added to 0.5 ml of sample, and incubated in a dark place for 5 minutes at room temperature. Next, 0.5 ml of

6% sodium carbonate and 2.0 mL of deionized water was added. The mixture was kept in a dark place for 1 hour at room temperature. The absorbance was measured at 765 nm. The pH of the wine was determined using a pH meter.

The beet wine has 63% inhibition which indicates the presence of a high concentration of antioxidants. According to Folin-Ciocalteu method, the total phenolic content of the beet wine is 0.0046 GAE. The wine is mildly acidic, and the pH is 4.6.

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