

**DETERMINATION OF SUCROSE, GLUCOSE AND
FRUCTOSE LEVEL IN LOW GROWN BLACK TEA
USING HIGH PERFORMANCE LIQUID
CHROMATOGRAPHY**

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ABSTRACT

Tea (*Camellia sinensis* (L) .O.kuntze is one of the major foreign exchange earning crops in Sri Lanka. During black tea manufacture, some of manufacturers add sugar to withered tea leaves to develop better appearance in black tea. Sugar adulteration in black tea has become a significant problem in tea industry which adversely affects the reputation of Ceylon Black Tea. As stipulated by the Tea Research Institute of Sri Lanka, maximum permissible levels of fructose, glucose and sucrose for low grown black teas are 25 mg/g, 20 mg/g, 35 mg/g .respectively. Present study was conducted to determine whether the black teas manufactured in low country of Sri Lanka were adulterated with sugar. Sample collection was done according to stratified random sampling keeping administrative districts; Galle, Matara, Rathnapura as stratum. Sixty three black tea samples (Dust 1 grade) were collected during three consecutive weeks. Fructose ,Glucose and Sucrose levels of the samples were determined using High Performance Liquid Chromatograph fixed with a Zorbax NH₂ column. Mobile phase comprised of 75% Acetonitrile and 25% de-ionized water. Detection was done using a RI detector coupled with RI Detector. Average fructose, glucose and sucrose contents of low grown tea were 6.3 ± 2.7 , 6.1 ± 3.1 and 7.3 ± 5.5 mg/g respectively. Fructose, glucose and sucrose contents of all tea samples collected from Matara and Rathnapura Districts were below the maximum permissible limits. Further, fructose and sucrose contents of Galle District's black tea samples were also below the maximum permissible limits. Glucose content of one sample collected from Galle district exceeded the maximum permissible limit. Average values for fructose, glucose and sucrose contents of black tea samples collected from Rathnapura districts (6.5 ± 1.8 , 6.9 ± 2.7 , 8.2 ± 3.5) were higher than those of black tea samples collected from Matara (5.3 ± 2.8 , 5.7 ± 2.5 , 6.1 ± 3.9) and Galle (6.2 ± 3.2 , 5.7 ± 3.9 , 7.5 ± 4.4) districts. It can be concluded that Matara and Rathnapura Districts' black tea samples comply with the stipulated maximum permissible levels of fructose, glucose and sucrose whereas Galle District's black tea samples comply with the maximum permissible levels of fructose and sucrose.

Key words: Black tea, fructose, glucose, sucrose, adulteration