

Variation of Polyphenols of Dried Black Tea in Kisii Highlands, Kericho and Mt. Kenya Region, Kenya

Armstrong Gachengo¹ Aloys Osano² & Bakari Chaka³

^{1,2,3}Department of Mathematics and Physical Sciences, Maasai Mara University

P.O. Box: 861-20500, Narok, Kenya

Tel: 0768901802

Email: armstronggachengo@gmail.com

Abstract

Tea production has been impacted negatively by climatic changes due to global warming, locally and internationally. These unfavorable climatic changes have affected both production and quality of tea. This project was aimed at quality assessment of tea produced from three counties in Kenya. Polyphenols, a group of compounds present in tea leaves are the major constituent, known for its antioxidant property. Polyphenols were extracted from dried and ground tea leaves. Enzyme in the fresh tea leaves were deactivated prior to drying followed by grinding and sieving. Caffeine, the other pharmacologically important compound, was extracted as a byproduct. Crude extraction was done with water and subsequently the extract was concentrated for decaffeination with 1,2-Dichloromethane. Polyphenols were extracted from the decaffeinated crude extract with ethyl acetate. Ethyl acetate was removed from the extract to get polyphenols. Total polyphenols in the product were analyzed using gas chromatography- mass spectrometer. Sample analysis were carried out using Stat and Excel. Tea from Mt. Kenya region had three fatty acids namely; n-Hexadecanoic acid, Oleic acid, 6-Octadecenoic acid. Also had Benzaldehyde an essential oil and nine phthalate esters. Kericho tea had six phthalate esters, pentacosane, cyclohexanol, 1,3-dimethyl-,cis. Kisii tea had two essential oils, five phthalate esters, Acetic acid, alkanes and alcohols. Indicating tea from Mt. Kenya region was the best. Regulatory bodies should monitor the quality of fertilizers, processing and packaging of tea. More research should be done to come up with climate resilient tea cultivars, encourage organic farming in order to improve the quality. Climatic changes have resulted producers to increase fertilizer input to boost production. The safe level of phthalates is 0.05 mg/kg body weight per day.

Keywords; Polyphenols, caffeine, ethyl acetate