ABSTRACT

Olivia Virginia (00000004131)

UTILIZATION OF BITTER LEAF (*Vernonia amygdalina*) EXTRACT, GREEN TEA (*Camelia sinensis*) AND STEVIA (*Stevia rebaudiana*) IN THE PRODUCTION OF FUNCTIONAL BEVERAGE

(xv + 71 pages: 9 tables, 22 figures, and 29 appendices)

Bitter leaves (*Vernonia amygdalina*) have many beneficial effects in human health including treating diseases such as diabetes mellitus type 2 (DMT2). Green tea is known to have rich polyphenolic compounds that are antioxidants. Besides that, stevia is a sweetener that contributes to no calorie. The aim of this study is to utilize bitter leaf extract, green tea and stevia in the production of functional beverage that is preferable and expected to help manage DMT2. The bitter leaf extract was combined with green tea with ratios of 1:7, 1:10 and 1:13 and different concentration of stevia included 200, 400 and 600 ppm. The beverages were analysed for its physicochemical characteristics (pH, color, titratable acidity and total soluble solids) and sensory analysis (color, aroma, taste, aftertaste, overall). The most preferred formula is beverage with ratio bitter leaf extract-green tea of 1:10 and concentration of stevia of 600 ppm. It has IC$_{50}$ of DPPH (2,2-diphenyl-1-picryl-hydrazyl) radical scavenging and α-glucosidase inhibition activity of 16767.55 ppm and 0.8393 mg AE/mL beverage, respectively. The total phenolic content of the beverage is 1.7477 mg GAE/mL beverage. The nutritional compositions of the functional beverage are 0.04% protein, 0.02% fat, 0.02% ash, 0.15% carbohydrate and 99.77% water.

Keywords: α-glucosidase inhibition activity, antioxidant, bitter leaf, extraction, functional beverage, green tea, stevia, physicochemical properties

References: 93 (1990-2015)