

Sabah snake grass extract pre-processing: Preliminary studies in drying and fermentation

Abstract

Clinacanthus nutans (Burm. F.) Lindau which also known as 'Sabah Snake Grass' among Malaysians have been studied in terms of its medicinal and chemical properties in Asian countries which is used to treat various diseases from cancer to viral-related diseases such as varicella-zoster virus lesions. Traditionally, this plant has been used by the locals to treat insect and snake bites, skin rashes, diabetes and dysentery. In Malaysia, the fresh leaves of this plant are usually boiled with water and consumed as herbal tea. The objectives of this study are to determine the key process parameters for Sabah Snake Grass fermentation which affect the chemical and biological constituent concentrations within the tea, extraction kinetics of fermented and unfermented tea and the optimal process parameters for the fermentation of this tea. Experimental methods such as drying, fermenting and extraction of *C.nutans* leaves were conducted before subjecting them to analysis of antioxidant capacity. Conventional oven-dried (40, 45 and 50°C) and fermented (6, 12 and 18 hours) whole *C.nutans* leaves were subjected to tea infusion extraction (water temperature was 80°C, duration was 90 minutes) and the sample liquid was extracted for every 5th, 10th, 15th, 25th, 40th, 60th and 90th minute. Analysis for antioxidant capacity and total phenolic content (TPC) were conducted by using 2, 2-diphenyl-1-picryl-hydrazyl (DPPH) and Folin-Ciocalteu reagent, respectively. The 40°C dried leaves sample produced the highest phenolic content at 0.1344 absorbance value in 15 minutes of extraction while 50°C dried leaves sample produced 0.1298 absorbance value in 10 minutes of extraction. The highest antioxidant content was produced by 50°C dried leaves sample with absorbance value of 1.6299 in 5 minutes of extraction. For 40°C dried leaves sample, the highest antioxidant content could be observed in 25 minutes of extraction with the absorbance value of 1.1456. The largest diameter of disc that could be observed at 18 hours of fermentation sample had a pile size of 3 cm that had expanded to 5.9 cm of diameter which indicated the microbe's growth.