Antioxidant and cytotoxicity effects of eurycoma longifolia Jack. Leaf infusions against HEP-G2 human liver cancer cell line

ABSTRACT

Eurycoma longifolia Jack. has traditionally been consumed for its medicinal properties, especially its root and stem, which have significant pharmaceutical benefits. However, its leaves are usually discarded, and there is no documentation of utilization of its leaves as herbal tea. The main objective of this present study was to determine the antioxidant and cytotoxicity effects of E. longifolia leaves which were prepared as herbal tea. The effect of fermentation and different drying techniques were also evaluated. The collected leaves were divided into two batches and processed into unfermented and fermented leaves. Each batch was further divided into two smaller batches and dried using either a microwave-oven or freeze-drying technique. The infusions were prepared by brewing these dried leaves in hot boiling water (98 ± 2ºC) for 10 minutes. The antioxidant activity was evaluated based on ABTS assay, while cytotoxicity effect was evaluated using MTT assay against HEP-G2 liver cancer cell line. Based on the findings, the unfermented freeze-dried leaves had the highest ABTS value at 76.3 ± 1.6 mg AEAC/L in its infusion compared to the fermented leaves or those microwave oven dried. The cytotoxicity effect also showed the unfermented freeze-dried leaf infusion had the lowest IC50 value at 104.4 ± 3.4 µg/ml. These results indicated that antioxidants in this infusion might be heat-intolerant during the drying process. The lack of steam blanching during the leaf's fermentation process might also reduce the responsible antioxidants. Antioxidants such as phenolics and quassinoids previously reported in its leaves extract may contribute to its anticancer potential. Utilizing E. longifolia herbal tea as a natural antioxidant resource may serve as a valuable point of reference for forthcoming investigations into its dietary utilization and its potential application in the treatment of liver cancer.