ANTIOXIDANT, ANTICANCER AND GCMS ANALYSIS OF PORCUPINE BEZOAR AQUEOUS EXTRACTS: A COMPARATIVE STUDY BASED ON MODERN AND CONVENTIONAL EXTRACTION TECHNIQUES

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ABSTRACT

Porcupine bezoar (PB) is a mass of undigested material formed by calcification process that generally found in the gastrointestinal tract. Traditionally, it is claimed as the prince of antidote because of the medicinal properties believed to treat many diseases such as cancer, poisoning, dengue, typhoid, etc. The price for PB is high due to the scarcity as it can only be found in wild porcupine. This study was conducted with the aim to know the best way of reducing time and cost of analysis of PB extracts. Aqueous extract of PB was initially prepared by sonication method and then compared with the aqueous extract of PB obtained through conventional method, viz. maceration method. PB aqueous extracts were firstly screened for antioxidant capacity by *in vitro* bioautography based antioxidant assays, namely, 2,2'-azino-bis-3-ethylbenzothiazoline- 6-sulphonic acid (ABTS), 2,2-diphenyl--picrylhydrazyl (DPPH), and β-carotene. PB aqueous extracts were further evaluated for their total flavonoid, total phenolic contents and radical scavenging capacity. In vitro anti-proliferative assay was also performed on breast cancer cell (MCF7) to confirm its anticancer effect. Finally, Gas Chromatography-Mass Spectroscopy (GCMS) assay was done to detect bioactive compounds present in PB aqueous extracts. All three *in vitro* bioautography based antioxidant assays revealed antioxidant capacity with almost similar results for both PB aqueous extracts obtained through maceration and sonication methods. Sonication based PB aqueous extract showed higher total phenolic content than the maceration based PB aqueous extract, 8.79 ± 3.28 (µg GAE/5 mg dry weight) and 6.96 ± 2.25 (µg GAE/5 mg dry weight), respectively. Both the extracts were devoid of total flavonoid content. Maceration based PB aqueous extract showed lower IC_{50} value compared to sonication based PB aqueous extract for radical scavenging activity. Both PB aqueous extracts showed similar anti-proliferation effect on MCF7 cells. GCMS analysis for both the PB aqueous extracts displayed similar putative compounds that might be responsible for the aforementioned properties elicited viz. octadenoic acid, gomisin C and Cholest-5-en-3-ol (3. beta.)-, carbonochloridate. Based on the results obtained, it can be concluded that the sonication method can give an almost similar result in a shorter time and at a lower cost.

Keywords: Porcupine bezoar, antioxidant assays, anticancer, MCF7 cells, GCMS.

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