

Impact of drying processes on *Bryophyllum pinnatum* phenolic constituents and its anti-inflammatory and antioxidative activities in human erythrocytes

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Abstract

The effect of drying on the phytoconstituents, antioxidative, and anti-inflammatory properties of *Bryophyllum pinnatum* leaves was investigated. The phenolic constituents were characterized using HPLC-DAD. The aqueous extraction was done and various assays (Inhibition of membrane stabilization, albumin Denaturation and heat-induced hemolysis, malondialdehyde (MDA), and reduced glutathione (GSH) contents, as well as superoxide dismutase (SOD) activity), were carried out on human erythrocytes. The fresh portion (89.12 µg/ml) exhibited the highest potential to inhibit heat-induced hemolysis compared to the standard drug—Diclofenac (91.51 µg/ml). Freeze-dried sample showed the highest inhibitory potential on albumin denaturation ([Freeze-dried-330.72 µg/ml], [Diclofenac-318.63 µg/ml]) and membrane destabilization ([Freeze-dried-331.93 µg/ml], [Diclofenac-289.57 µg/ml]) when compared with Diclofenac. Similarly, the freeze-dried sample showed the highest GSH and SOD level and lowest MDA level when human erythrocytes challenged with tertiary butyl hydroperoxide (tBHP) were treated with the extract. This study confirms the retention of a considerable quantity of bioactive constituents of plants when freeze-dried.

Practical applications

The ideal method of drying *Bryophyllum pinnatum* and possible anti-inflammatory potential was investigated. This work may apply to the development of anti-inflammatory agents from a natural source with little or no side effect in managing inflammation.

KEYWORDS: anti-inflammatory, antioxidative, *Bryophyllum pinnatum*, drying, phenolics

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