

RESEARCH ARTICLE

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Antioxidant capacities and total phenolic contents of 20 polyherbal remedies used as tonics by folk healers in Phatthalung and Songkhla provinces, Thailand

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Abstract

Background: Uses of polyherbal formulations have played a major role in traditional medicine. The present study is focused on the formulations used in traditional Thai folkloric medicine as tonics or bracers. Twenty documented polyherbal mixtures, used as nourishing tonics by the folk healers in Phatthalung and Songkhla provinces in southern Thailand, are targeted. Despite traditional health claims, there is no scientific evidence to support the utilization of polyherbal formulations.

Methods: The phenolic and flavonoid contents of the polyherbal formulations and a series of antioxidant tests were applied to measure their capability as preventive or chain-breaking antioxidants. In addition, the cytotoxic activity of effective formulations was assayed in *Vero* cells.

Results: Ninety-eight plant species belonging to 45 families were used to prepare the tested formulation. The preliminary results revealed that water extracts of THP-R016 and THP-R019 contain a high level of total phenolic and flavonoid contents and exhibit remarkable antioxidant activities, as tested by DPPH, ABTS, and FRAP assays. The extract of THP-R019 also showed the strongest metal chelating activities, whereas THP-R016 extract possessed notable superoxide anion and peroxy radical scavenging abilities.

Conclusions: The data provide evidence that the water extracts of folkloric polyherbal formulations, particularly THP-R016, are a potential source of natural antioxidants, which will be valuable in the pharmaceutical and nutraceutical industries. The free radical scavenging of THP-R016 may be due to the contribution of phenolic and flavonoid contents. Useful characteristics for the consumer, such as the phytochemical profiles of active ingredients, cellular based antioxidant properties and beneficial effects *in vivo*, are under further investigation.

Keywords: Antioxidant activity, Folkloric medicine, Traditional medicine, Tonics

Background

Traditional medicine, especially herbal therapies, has a crucial role in the health care system in both developing and industrialized countries. According to recent survey results, the percentage taking herbal supplements was almost 20% in Europe [1]. In several countries, such as

Nigeria [2], Turkey [3], Saudi Arabia [4], and Thailand [5], more than 40% of informants have used herbal medicine. It should be noted that 35% of respondents in the United States consumed herbal products as antioxidant supplements [6]. Free radicals have emerged as an important cause of oxidative stress-related diseases, including cardiovascular diseases, cancer, neurodegenerative disorders, and ageing. Effective antioxidants can delay or inhibit the oxidation of biomolecules, especially the polyunsaturated fatty acids of cell membranes, or prevent oxidative DNA damage, which affected several

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