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Potential clinical application of PG2 (Astragalus polysaccharide) in cancer-related fatigue and immune modulation

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A major complaint (>90%) amongst cancer patients undergoing chemotherapy is fatigue and it remains an unmet medical challenge. Cancer-related fatigue (CRF) is well defined in the 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10). Coupled with the limited understanding of the etiological basis of CRF, current treatment options, such as psycho-stimulants and hematopoietic agents, are ineffective. However, there is increasing recognition of the role of inflammatory cytokines, especially IL-6 and TNF-alpha on CRF pathogenesis. The prevailing model of cancer treatments often results in the dysregulation of the immune system, which in turn negatively modulate the central nervous system (CNS). Traditional Chinese Medicine (TCM) has a long history of treating patients who suffer from deficient 'qi' and blood, as well as imbalance of 'yin' and 'yang'. Interestingly, modern science now recognizes the immune modulating activity of many TCM compounds. PG2, a highly purified polysaccharide portion of Astragalus membranaceus, activates immune cells and influences the cytokine network. A pivotal randomized, double-blind, placebo-controlled clinical trial investigated the therapeutic efficacy of PG2 for CRF treatment in advance cancer patients and found that PG2 significantly alleviated CRF: 82% of the patients had reduced fatigue symptoms after the first PG2 cycle. Thus, PG2 appears to be an effective treatment for CRF. For the indication of CRF in palliative care, PG2 was TFDA-approved for commercial distribution in Taiwan since 2010. The present study focuses on PG2's immune-modulating function, such as its effect on inflammation and the tumor microenvironment. Tumor-associated macrophage (TAM) plays a crucial role in tumor growth, progression and metastasis, and is a target for TCMs such as PG2. Furthermore, we have established an algorithm for early detection of CRF and its accurate diagnosis, based on the correlation of several cytokine biomarkers and CRF questionnaires. In conclusion, it is anticipated that our work will further shatter the myth of the therapeutic intractability of CRF and push the limits of integrative medical care.

Biography

Chi-Tai Yeh received his PhD in Food Science and Biotechnology from National Chung Hsing University. He is currently the Research Fellow in the Graduate Institute of Clinical Medicine at the Taipei Medical University. He is also the Deputy Director of Department of Research and Education of Taipei Medical University-Shuang Ho Hospital. He has contributed 2 book chapters, published 45 articles in the field of cancer & nutritional chemistry journal and got 5 patents in the medical compound of cancer therapy. His major research interests include in cancer cell biology, cancer stem cell research, nutrigenomics and cancer chemoprevention with dietary phyto-chemicals.

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