

Differential functional genomic effects of anti-inflammatory phytocompounds on immune signaling in cancer cells

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Comparative subgenomic analysis of the immunological effects of different phytocompounds is considered as a useful approach to rapidly distinguish the complex and specific effects of a spectrum of candidate phytomedicines with potential clinical applications. Here we characterize the immunomodulatory activities of three anti-inflammatory phytocompounds (emodin, shikonin, and cytopiloyne) and a defined plant extract from *Echinacea purpurea* (BF/S+L/Ep) by focused DNA microarray analysis of selected immune-related genes, using LPS-stimulated THP-1 monocytic leukemia cells as a model. Shikonin and emodin significantly inhibited the early expression (within 0.5 h) of approximately 50 genes, notably cytokines TNF- α , IL-1 β and IL-4, chemokines CCL4 and CCL8, and inflammatory modulators NFATC3 and PTGS2. In contrast, neither cytopiloyne nor BF/S+L/Ep inhibited the early expression of these 50 genes, but rather inhibited most late-stage expression (~12 h) of another immune gene subset. TRANSPATH database key node analysis identified the extracellular signal-regulated kinase (ERK) 1/2 activation pathway as the putative target of BF/S+L/Ep and cytopiloyne. Western blot confirmed that delayed inactivation of the ERK pathway was indeed demonstrable for these two preparations during the mid-stage (1 to 4 h) of LPS stimulation. We further identified ubiquitin pathway regulators, E6-AP and Rad23A, as possible key regulators for emodin and shikonin, respectively. The current focused DNA microarray approach rapidly identified important subgenomic differences in the pattern of immune cell-related gene expression in response to specific anti-inflammatory phytocompounds. These molecular targets and deduced networks may be of use in future biochemical and immunological classification of candidate anti-inflammatory phytomedicines.



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Dear Assistant Professor Shao-Chih Chiu

Thank you for submitting a poster for our 7th International Conference on Herbal Medicine. We are pleased to accept your poster on *Differential functional genomic effects of anti-inflammatory phytochemicals on immune signaling in cancer cells* for the conference and invite you to attend as a conference delegate.

Our conference will be held from Friday 23 July to Sunday 25 July 2010 at Outrigger Twin Towns Resort, Coolangatta, Queensland Australia.

We look forward to meeting with you at the conference.

Kind regards

Anne Cowper
Conference Coordinator
7th International Conference on Herbal Medicine