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A075 Antioxidant activity of extracts from *Lactuca indica*

Sheng-Yang Wang, Hsing-Ning Chang, Kai-Ti Lin, Ning-Sun Yang and Lie-Fen Shyur

Institute of BioAgricultural Sciences, Academia Sinica, No. 128 Academia Rd, Section 2, Nankang, Taipei, 115, Taiwan, ROC.

Lactuca indica (Asteraceae) is a medicinal plant widely distributed in Asia. The whole plant of *L. indica* has been used as a folk medicine for anti-inflammatory, antibacterial medications as well as for treatment of intestinal disorder. However, limited scientifically proven information is available on the bioactivity, pharmacological function, and specific clinical efficacy of this plant. This study is the first report to evaluate the potential application of *L. indica* as chemo-prevention therapeutics, as examined by several anti-oxidation assay systems. Various *ex vivo* and *in vitro* experimental systems for measuring antioxidant activities, including free radical and superoxide radical-scavenging assays, inhibition of lipid peroxidation, prevention of DNA strand cleavage, and reduction of oxidative stress in human promyelocytic leukemia HL-60 cells, were employed in this study. We have found that the hot water extract from *L. indica* can confer highly significant antioxidant activities in relative to catechin, a well known antioxidant identified from green tea. A bioactivity-mediated fractionation principle was employed to identify a most potent fraction derived from the total hot water extract of the plant. Metabolite profiling coupled with various spectrometry analyses, including UV, IR, MS, and NMR, show that five phenolic compounds, *i.e.*, protocatecholic acid, methyl *p*-hydroxybenzoate, caffeic acid, quercetin 3-O- β -glucopyranoside, and luteolin 7-O- β -glucopyranoside, are the major constituents in *L. indica* extract. These compounds apparently play key role(s) in the significant antioxidant activities of *L. indica*. Quercetin 3-O- β -glucopyranoside is identified as a candidate index/referencing component of the plant extract. Each gram of hot water extract of *L. indica* contains 27.3 mg of quercetin 3-O- β -glucopyranoside, as quantitatively determined by HPLC analysis.

A076 Ethnopharmacological study of medicinal Compositae herbs in Taiwan

Sheng-Yang Wang, Chiu-Ping Lo, Hsing-Ning Chang, Ning-Sun Yang and Lie-Fen Shyur

Institute of BioAgricultural Sciences, Academia Sinica, No. 128 Academia Rd, Section 2, Nankang, Taipei, 115, Taiwan, ROC.

Several plant species of Compositae family has been claimed and used in treatment of respiratory infection, immune disease, and various diseases worldwide for hundreds of years. However, most of the claimed medicinal usages in specific medicinal plants are lack of stringent and scientific evaluation and proven. In this report, we have selected five Compositae herbs that have been broadly folkloric used in Taiwan, namely *Lactuca indica*, *Crassocephalum rabens*, *Bidens pilosa*, *Ixeris chinensis*, and *Ixeris laevigata*, as candidates to re-evaluate and/or characterize their putative bioactivities and potential medicinal applications. Bioactivities including antioxidant, anti-bacteria, anti-complement, and anti-human cells proliferation (cytotoxicity) of the hot water extracts from the candidate Compositae plants were investigated. Anti-oxidant activities including scavenging DPPH radical, superoxide anion and hydroxy radicals, and inhibition of lipid peroxidation were evaluated. The results of antioxidant activity assays demonstrated that extracts from *L. indica* and *B. pilosa* exhibited the most significant activities among the test herbal extracts. For anti-bacterial activity, at the dosage of 1 mg/ml *B. pilosa* extract revealed a slight growth inhibition (10%) over *Staphylococcus aureus* and no detectable activities could be found in other herbal extracts. Considering with anti-complement activities, *C. rabens* exhibited the strongest activity in the five herbal extracts; the IC₅₀ value was detected at 0.15 mg/ml. Cytotoxicity of the extracts against three human normal or tumor cell lines, including MCF-7 mammary tumor cells, HepG2 hepatoma cells and CCD966SK normal fibroblast cells, were evaluated *in vitro* using MTT colorimetric assay. At 1 mg/ml dose, *Crassocephalum rabens*, *Bidens pilosa*, and *Ixeris chinensis* extracts exhibited a significant anti-MCF-7 cells proliferating effect. In other words, the viable cell number of MCF-7 cells was reduced to lower than 25% when the cells were treated. More than 80% of HepG2 and fibroblast cells were survived by treating with the same test extracts. This study provides valuable and useful information and indications for further exploring the potential nutraceutical and pharmaceutical applications of the Compositae medicinal herbs.
