HIGH CAPACITY COUNTER CURRENT CHROMATOGRAPHY FOR THE ISOLATION OF ACTIVE INGREDIENTS FROM MEDICINAL PLANTS

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Countercurrent chromatography (CCC) is a liquid-liquid purification technology with both liquid mobile and stationary phases. Being a solid support free technique, it has many advantages for the isolation of active ingredients from medicinal plant materials such as handling crude extracts including particulates, no irreversible adsorption and therefore, 100% sample recovery. CCC is being widely used across the world for natural product research, especially in China, Korea, Brazil, South Africa, Singapore, Tasmania and Europe. At Brunel Institute for Bioengineering and its Advanced Bioprocessing Centre, we have developed, in partnership with Dynamic Extraction Ltd, three scales of high performance high throughput CCC-centrifuges: MINI (5–40ml), MIDI (39–1L) and MAXI (4.6 and 18L). Each is capable of giving separations in the order of minutes. Purifications are optimised on the MINI with minimum crude and solvents used and then scaled to the MIDI or MAXI with no loss of resolution and the same fast processing time, while throughputs can be between 1–5kg/day. CCC technology is being used to isolate active principles from medicinal plant extracts in collaboration with Sichuan University, Tsinghua University, Shanghai East China University and Guangzhou Xiangxue Pharmaceutical Co. Several case studies and latest research on CCC applications will be presented. Being part of European Framework 7 "Good Practice in Traditional Chinese Medicine Research" Consortium we take an active part in developing easy-to-follow statements on the various regulatory frameworks for complex herbal mixtures to facilitate commercialisation of Chinese Herbal Medicines in Western markets. CCC plays an important role in the quality control and standardisation process of TCM as one of the reliable extraction and separation technologies.

SCHIZANDRA OIL EXTRACT IS A SOURCE OF ANTIOXIDANT COMPOUNDS

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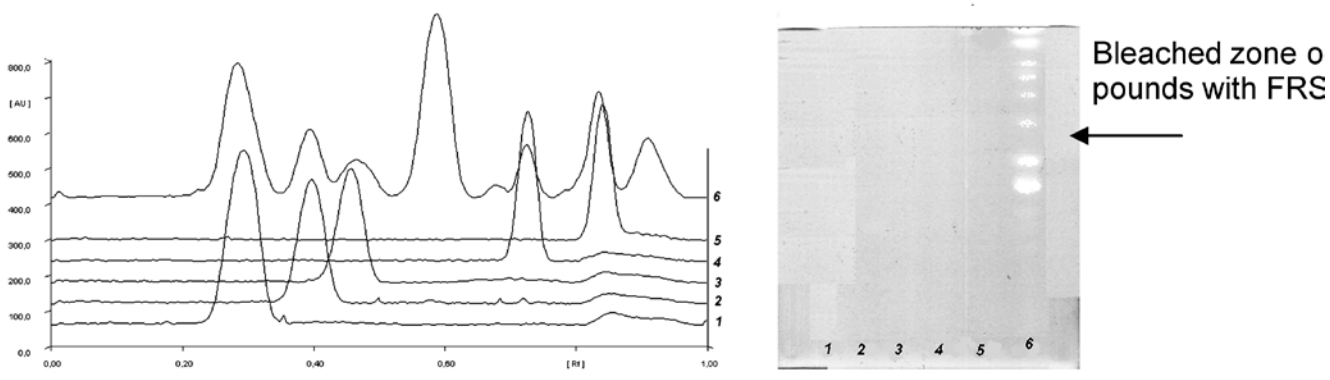
The aim of this study was to determine schizandra oil extract free radical scavenger activity (FRSA) and its association with the extract composition. *Schizandra chinensis* oil extract was used. Test solution was prepared by methanol extraction (2/1 v/v). The DPPH method was used for estimating FRSA of the test solution by spectrophotometry (1) and by HPTLC-DPPH• (2). A samples were spotted on Silica gel 60 F 254s glass plates (Merck, Germany) using a Linomat V (Camag). The plates were developed in mixture of toluene/ethylacetate (7/3). Plates detection was carried out with TLC Scanner 3 (Camag). IC50 of Schizanda oil extract was established 2.9 mg/ml by spectrophotometry.



A) B)

Figure 1. Densitogramms by 254 nm (A) and derivatized by DPPH solution plate in day-light (B). 1–5 — schisandrols A and B, schisantherin A, schisandrins A and B respectively (all Phytolab, 1 mg/ml methanol, 2 µl); 6 — test solution, 5 µl