

Purification of Gentiopicroside from *Gentiana lutea* root extract using Fast Centrifugal Partition Chromatography (FCPC™): Scale-up of the process

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INTRODUCTION

Gentiopicroside, a secoiridoid in abundance in *Gentiana lutea* roots, has been found to possess pharmacological activity against various diseases. Phytotherapeutical supplements that exist in the market are characterized by their content in gentiopicroside. Fast Centrifugal Partition Chromatography (FCPC™) ranks among the most modern, productive and cost-effective natural product isolation technologies. It does not utilize any solid packing material that needs disposal, saves sample from irreversible adsorption and assures high throughputs, compared to preparative HPLC.

RESULTS & COCLUSIONS

Bench preparative scale FCPC™ with 1L rotor was utilized for the purification of gentiopicroside from an ethanolic extract of *Gentiana lutea*, containing 11% gentiopicroside. FCPC A system was connected with integrated peripheral system comprising of elution pump (250ml/min), automated injection valve, UV-detector (200-600nm), fraction collector (192 tubes), software and built-in PC for automated control. Detection of gentiopicroside was performed at 254nm and subsequent quantitative analysis was performed through HPLC-UV. The purity and recovery of gentiopicroside were 95.6% and 87% respectively, within a short separation time and with reasonable solvent consumption, making the process very cost-efficient. At the next step, the process was scaled-up in pilot scale FCPC™ with 5L rotor, equipped with an equivalent integrated peripheral system. Results were optimized through scale-up: purity and recovery of gentiopicroside were 95.1% and 89% respectively.

PROCESS PARAMETERS & RESULTS 1L FCPC A	
Flow rate	50 ml/min
Rotation speed	1200 rpm
Solvent system	EtOAc: i-PrOH: H2O 7/3/10
Injected Quantity	15g
Purity	95.6%
Recovery	87%
Solvent consumption	1.3L
Separation time	46 min.

PROCESS PARAMETERS & RESULTS 5L FCPC D	
Flow rate	250 ml/min
Rotation speed	1000 rpm
Solvent system	EtOAc: i-PrOH: H2O 7/3/10
Injected Quantity	90g
Purity	95.1%
Recovery	89%
Solvent consumption	7.8L
Separation time	52 min.

