

Squalene purification from Olive oil refining by-products using Fast Centrifugal Partition Chromatography (FCPC™)

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INTRODUCTION

Squalene is an important chemical utilized in pharmaceuticals, nutritional supplements and cosmetics. Until recently, the main source of squalene has been shark liver's oil, which is rich in this valuable compound. This non-sustainable origin, nevertheless, is less and less accepted by numerous regulatory authorities. Thus, nowadays, more ecological and sustainable sources are being investigated in the plant kingdom. Olive fruit oil (*Olea europaea*) and *Amaranthus* seed oil, are among the most important sources in the plant kingdom. Moreover, more modern, efficacious and sustainable technologies are investigated, in order to guarantee high purities and recoveries for the extraction and isolation processes. Fast Centrifugal Partition Chromatography (FCPC™) ranks among the most modern, productive and cost-effective 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. Especially for very apolar compounds, FCPC™ demonstrates its versatility by utilizing non-aqueous biphasic solvent systems.

RESULTS & COCLUSIONS

Bench preparative scale FCPC™ with 1L rotor was utilized for the purification of squalene from olive oil deodorizer distillates (refining by-product), containing 13% squalene. 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 Squalene was performed at 218nm and subsequent quantitative analysis was performed through Gas Chromatography. The purity and recovery of squalene were >95% and >90% respectively, within a short separation time and with reasonable solvent consumption, making the process very cost-efficient.

PROCESS PARAMETERS

Flow rate	50 ml/min
Rotation speed	1200 rpm
Solvent system	Hept/ACN/BuOH 1.8:1.4:0.7
Injected Quantity	15g

RESULTS

Purity	>95%
Recovery	>90%
Solvent consumption	3L
Separation time	34 min.

