Injection capacity test on Analytical FCPC® with 50 ml column for spilanthol purification from Jambu extract

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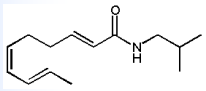
Introduction

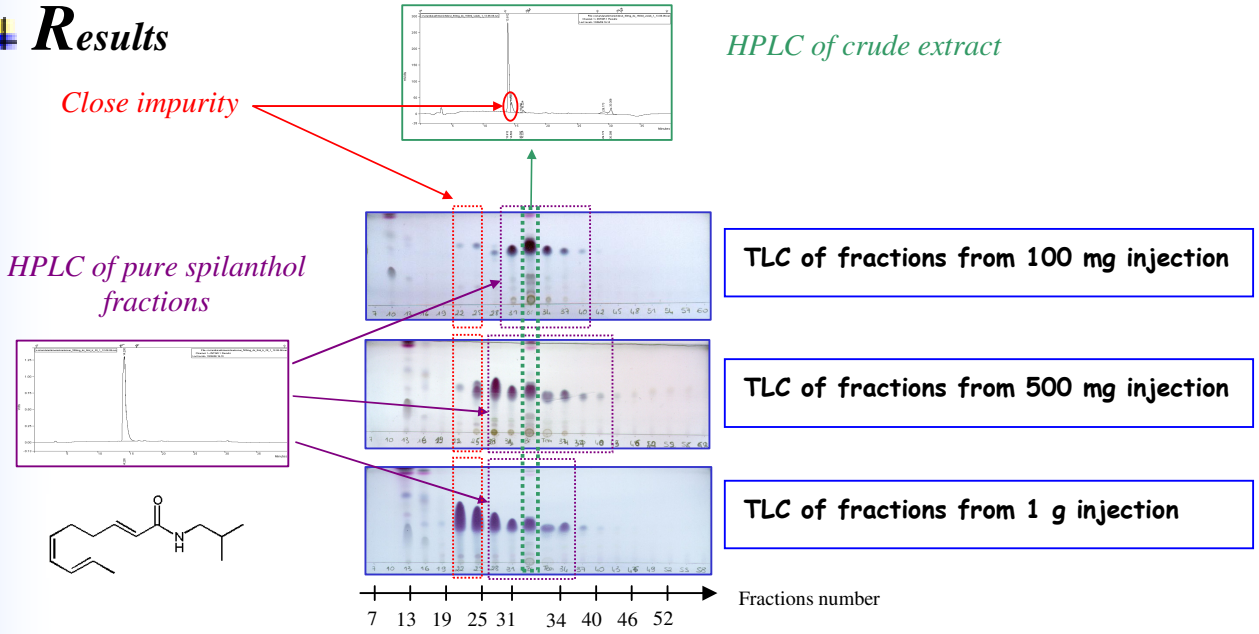
Jambu (*Spilanthes acmella*) is commonly called "toothache plant" because its leaves and flower heads contain a natural analgesic.

The main constituent is spilanthol ($C_{14}H_{23}NO$). This amide is an effective antiparasitic and is used as a native remedy against malaria. It is often used topically to treat bacterial infection of the skin and wounds, and fungal infections such as ringworm.



Three trials were done on FCPC®50 to follow resolution of the separation between 100, 500 and 1000 mg injection of crude *Spilanthes acmella* extract. Detection is done with UV/Vis detector at 230 nm. Fractions analysis are done by TLC on silica gel 60 with fluorescent indicator UV 254 and vanillin sulphuric, and HPLC on C18 column at 220 nm.

Results



Technical Parameters	
Flow-rate	6 ml/mn
Quantity injected	100, 500 and 1000 mg (in 1, 5 and 10 ml)
Rotation Speed	1800 rpm
Separation time	35 min
Solvent consumption	210 ml

Results			
Injected mass	100 mg	500 mg	1 g
Spilanthol mass in crude extract	25 mg	125 mg	250 mg
Collected spilanthol mass	22 mg	95 mg	134 mg
Purification yield	88%	76%	54%
Purity	99.8%	93.6%	93.6%

Conclusions

TLC and HPLC chromatograms show that purification yield exceed 75% until 500 mg crude extract injection and spilanthol concentration increases in collected fractions with mass injected. For this application, analytical FCPC® allows 1 g injection of complex crude mixture with a good purification yield even with close impurity in 35 mn and less than 210 ml of solvent.

Moreover, this purification can be easily scale up to 200 ml, 1 and 5 L instrument for production.

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