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New *N*-alkylamides from *Anacyclus pyrethrum*

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INTRODUCTION

The roots of *Anacyclus pyrethrum* (AP) DC, (Asteraceae) are frequently used in traditional medicine *e.g.* as aphrodisiac. Currently, thirteen *N*-alkylamides (*N*-AAs), including isobutylamides (IBAs), tyramides (4-OH PEAs), *N*-methyl isobutylamides (*N*-Me IBAs) and a 2-phenylethylamide (2-PEA), with pellitorine (#3) as major *N*-

Depending on the extraction method and solvent, different yields of *N*-AAs can be found, possibly resulting in alterations in biological effects. Therefore, analytical profiling of the bio-active *N*-AA in these plant preparations is *conditio sine qua non* parameter, with HPLC/ESI-MS as recommended technique for comprehensive characterisation of *N*-AAs in plant extracts [3]. For the first time, an exhaustive *N*-AA profiling of an AP extract is performed, using HPLC/UV/ESI-MS.

EXPERIMENTAL

HPLC/UV/ESI-MS *N*-AAs profiling of an ethanolic extract from the dry roots of AP was performed using a prevail RPC_{18} (250 × 4.6 mm, 5 µm) column with an optimized linear gradient consisting of 1% acetic acid in ultrapure water and acetonitrile. MS was performed in the positive mode. Identification was based on the *m/z* values and characteristic fragmentation ions in MS^1 and CID-MS^2 [3].

RESULTS

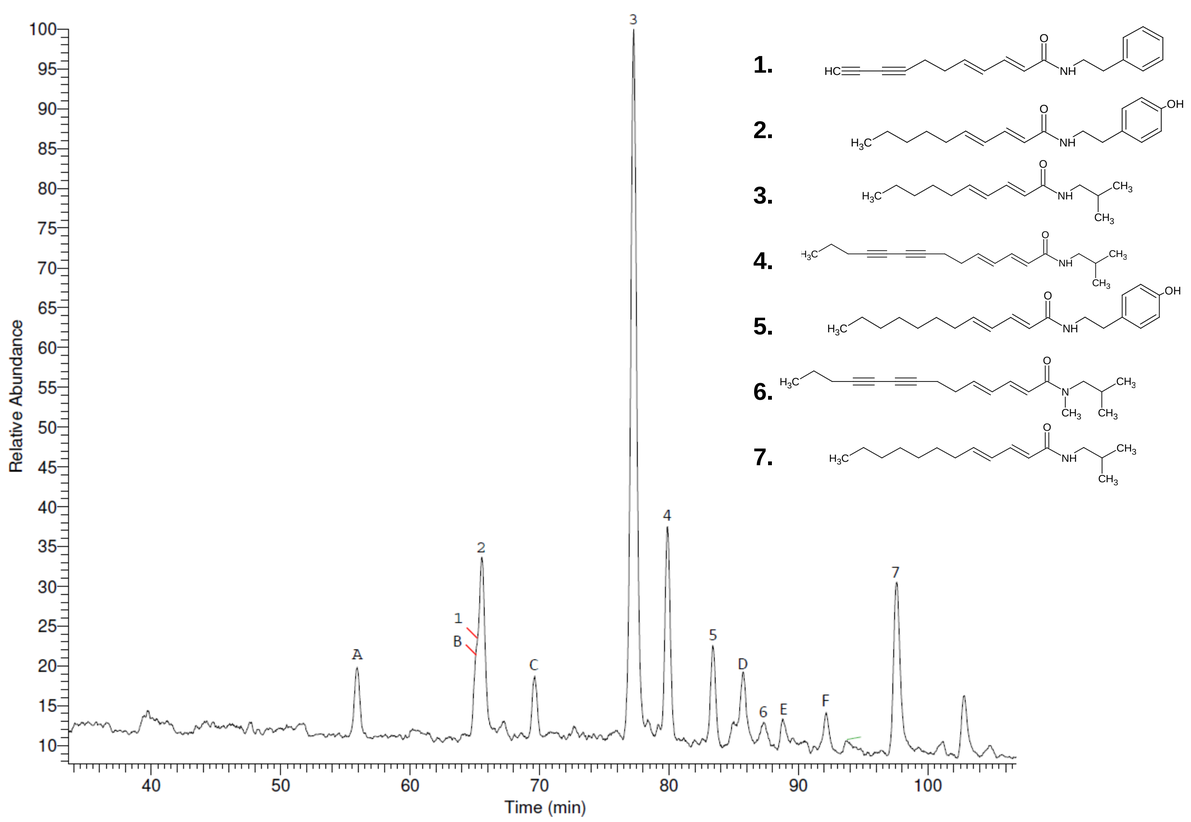


Fig 1. Detailed TIC-MS chromatogram of the identified *N*-alkylamides in the AP extract

RESULTS and DISCUSSION

Thirteen *N*-AAs (4,87% m/m) were detected (Fig. 1). Compound 1-7 have previously been reported in AP [1,2], while compound A has only been documented in other Asteraceae genera. The five other ones (#B-F) have never been identified in AP or other plants, and are thus totally new [4].

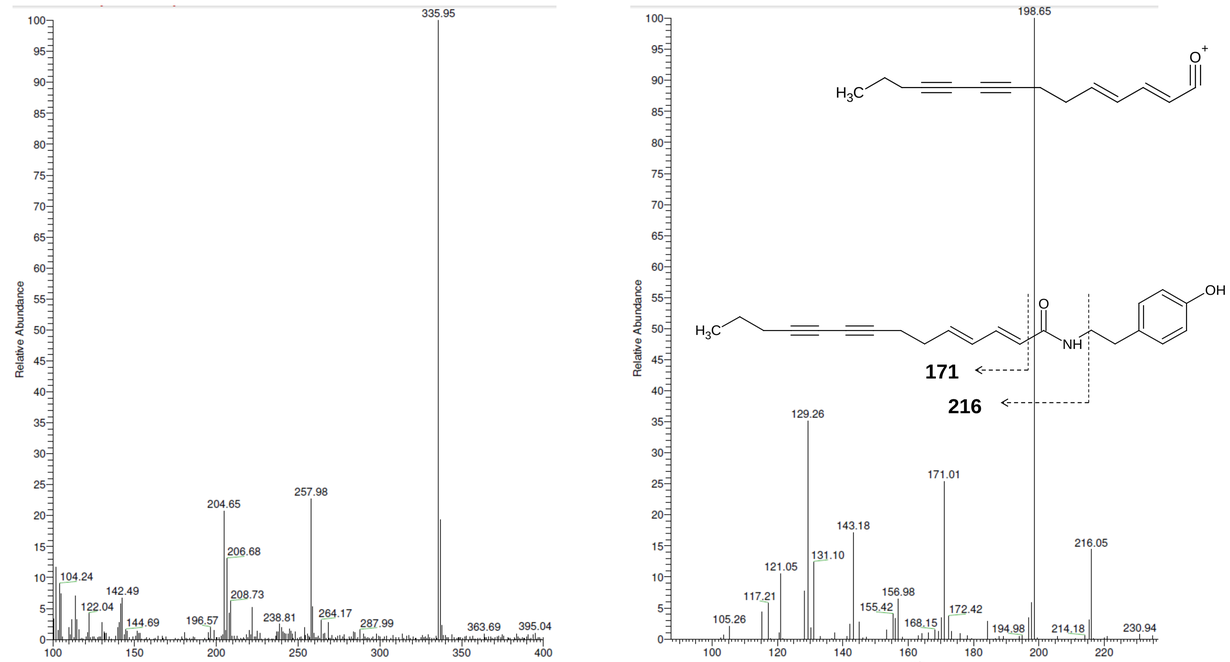
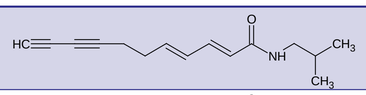
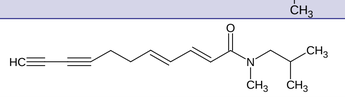
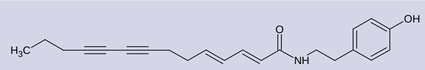
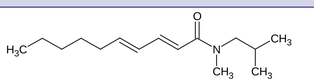
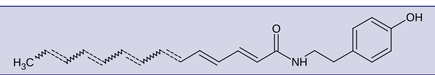
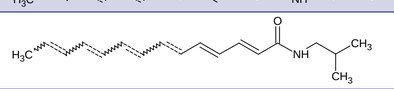


Fig 2. MS^1 (left) and MS^2 (right) spectrum of tetradeca-2*E*,4*E*-diene-8,10-diynoic acid 4-OH PEA (#C)

#	Rt (min)	Precursor ion (m/z)	Structure
A	55.9	230	
B	65.0	244	
C	69.6	336	
D	85.7	238	
E	88.8	342	
F	92.1	276	

CONCLUSIONS

Performing *N*-alkylamide profiling in *Anacyclus pyrethrum*, 13 compounds are identified of which 5 are new and not yet reported in plants.

REFERENCES

[1] Jente R et al. Polyacetylenic compounds .206. Constituents of *Anacyclus pyrethrum* DC. Chemische Berichte-Recueil 1972;105:1694-1700

[2] Burden et al. Amides of vegatible origin. 12. A new series of alka-2,4-dienoic tyramine-amides from *Anacyclus Pyrethrum* DC, (Compositae). Journal of the Chemical Society 1969:2477-2481

[3] Boonen J et al. LC-MS profiling of *N*-alkylamides in *Spilanthes acmella* extract and the transmucosal behaviour of its main bio-active spilanthol. Journal of Pharmaceutical and Biomedical Analysis 2010;53:243-249

[4] Boonen J et al. LC-MS *N*-alkylamide profiling of an ethanoic *Anacyclus pyrethrum* (Asteraceae) root extract. *Submitted for publication.*