J Nanomed Nanotechnol 2015, 6:4
http://dx.doi.org/10.4172/2157-7439.S1.022

LC-MS N-alkylamide profiling of an ethanolic *Anacyclus pyrethrum* root extract

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The roots of *Anacyclus pyrethrum* DC (AP) (Asteraceae) are frequently used in traditional medicine as Vajikarana Rasayana. An ethanolic extract of root of *Anacyclus pyrethrum* demonstrated its potential to enhance the sexual behaviour of male rats, with a dose dependent effect on sperm count and androgens concentration. Phytochemical analysis of ethanolic extract of *Anacyclus pyrethrum* revealed that it is rich in N-alkylamide. This study therefore sought to assess characterization of ethanolic extract of *Anacyclus pyrethrum* root. Root extract was performed using a gradient reversed phase high performance liquid chromatography/UV/electrospray ionization ion trap mass spectrometry (HPLC/ESI-MS) method on an embedded polar column. MS1 and MS2 fragmentation data were used for identification purposes, while UV was used for quantification. Thirteen N-alkylamides (five N-isobutylamides, three N-methyl isobutylamides, four tyramides and one 2-phenylethylamide) were detected. Five of them identified as undeca-2E,4E-diene-8,10-diynoic acid N-methyl isobutylamide, tetradeca-2E,4E-diene-8,10-diynoic acid tyramide, deca-2E,4E-dienoic acid N-methyl isobutylamide, tetradeca-2E,4E,XE/Z-trienoic acid tyramide and tetradeca-2E,4E,8Z,10Z-tetraenoic isobutylamide are novel compounds, which have never been identified in *Anacyclus pyrethrum*.

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Single walled carbon nanotubes-based composites for hybrid organic photovoltaic application

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We report on the incorporation of carbon nanomaterials (CNMs) such as single-walled carbon nanotubes (SWCNTs) into organic PV (OPV) cells for efficiency optimization. Although CNMs have been used before in OPVs, the focus is put here to elucidate the effect of the structural properties of the CNMs on OPV performance, which is poorly understood. More specifically, we address the issue of improving the performance of a new hybrid OPV device by combining the physical and chemical characteristics of light-sensitive conjugated polymers (CP), e.g. P3HT, with the high electrical conductivity of SWCNTs by blending the both in a composite photoactive layer. The focus is put on exploring in depth the electronic and optoelectronic properties of the composite material in an OPV scheme and exploring its corresponding photo-conversion capability. The root-mean-square roughness, photoluminescence and optical absorption were found to increase with increasing SWCNTs content and a non linear correlation between the nanotubes loads and the open circuit voltage VOC was clearly pointed-out. Our best performances were obtained with 2.5 wt.% SWCNTs concentration, with a VOC of 0.78 V and a power conversion efficiency of 3.65%.

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