

***Spilanthes acmella* ethanolic flower extract: LC-MS alkylamide profiling and its effects on sexual behavior in male rats**

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Abstract

According to Indian Systems of Medicine, *Spilanthes acmella* (L.) Murr. (Family- Asteraceae), is considered effective in the treatment of sexual deficiencies especially due to aging. In the present study, characterization of ethanolic extracts of the *Spilanthes acmella* flower and its effect on general mating pattern, penile erection and serum hormone levels of normal male Wistar albino rats were investigated and compared with sildenafil citrate. *In-vitro* nitric oxide release was also investigated in human corpus cavernosum cell line. *N*-alkylamides are a promising group of naturally occurring bio-actives in *Spilanthes spp.* Therefore, *N*-alkylamide profiling of ethanol extract of *Spilanthes acmella* flowers was performed, using a gradient reversed phase high performance liquid chromatography/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. The extracts (50, 100 and 150 mg/kg body weight/day) and sildenafil citrate (5mg/kg) were administered orally for 28 days. The behavioral parameters were observed at day 0, 15, 28 and after a lapse of 7 and 14 days of discontinuance of drug treatment. Five *N*-isobutylamides, one 2-methylbutylamide and one 2-phenylethylamide were tentatively identified. The orally administered extract had a dose dependent effect on mounting frequency, intromission frequency and ejaculation frequency. A dose dependent effect was also observed on the FSH, LH and testosterone serum levels. The aphrodisiac potential of an ethanolic *Spilanthes acmella* extract was demonstrated *in-vitro* and *in-vivo*. Study lends support to the traditional utilization of *S. acmella* as a sexual stimulating agent.