

SHORT COMMUNICATION

Natural male contraceptive: phytochemical investigation and anti-spermatogenic activity of *Pistia stratiotes* Linn.

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This work is an attempt to explore the anti-spermatogenic activity of *Pistia stratiotes* and to investigate it as a male contraceptive. The prepared extracts were screened for the presence of alkaloids, glycosides, steroids, flavonoids, saponin and phenolic compounds. To assess the anti-spermatogenic activity, mice were orally administered with the various extracts of *P. stratiotes* (dose: 100 and 200 mg/kg body weight/day, for 45 days) and the most active, ethanolic extract was subjected to the isolation of phytoconstituent responsible for the activity. Diethyl ether fraction of ethanolic extract was taken to isolate a saponin, sitosterol-3-*O*-[2,4-di-*O*-acetyl-6-*O*-stearyl]- β -D-glucopyranoside]. Anti-spermatogenic activity of the isolated saponin was evaluated at a dose of 50 mg/kg body weight/day, for 45 days. The treatment caused significant decrease ($P < 0.01$) in the weight of reproductive organs (testis, epididymis and seminal vesicle). The sperm count, sperm viability and serum testosterone levels were significantly lowered compared with that of the control group.

Keywords: *Pistia stratiotes*; anti-spermatogenic activity; testosterone; saponin; male contraceptive; natural

1. Introduction

Fertility regulation with plants, or plant preparations, has been reported in the ancient literature of indigenous systems of medicine. A large number of plant species with anti-fertility effects have been screened in China and India, beginning about 50 years ago, and were subsequently fortified by national and international agencies. However, the search for an orally active, safe and effective plant preparation, or its compound, is yet needed for fertility regulation. *Pistia* is a genus of aquatic plants in the family Araceae comprising a single species, *Pistia stratiotes*, often called water cabbage or water lettuce. It is abundantly available throughout India (Khan et al. 2011). In Indian traditional medicine, leaves were used for the treatment of ringworm infection of the scalp, syphilitic eruptions, skin infections, boils and wounds. In addition, infusion of leaves was used for dropsy, bladder complaints, kidney afflictions, diabetes, haematuria, dysentery and anaemia (Nadkarni & Nadkarni 2002). The root is bitter, diuretic and good for wounds, inflammation and burns (Khare 2007). *P. stratiotes* contains large quantity of 2-di-*C*-glycosylflavones of vicenin and lucenin type, and anthocyanin-cynidin-3-glucoside, luteolin-7-glycoside and traces of mono-*C*-glycosyl flavones – vitexin and orientin. A sterol – stigmastane – and three sitosterol acylglycosides – sitosterol-3-*O*-[2',4'-*O*-diacetyl-6'-stearyl]- β -D-glucopyranoside, sitosterol-3-*O*-[2'-*O*-stearyl]- β -D-xylopyranoside and sitosterol-3-*O*-[4'-*O*-

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