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Antinociceptive activity of *Pleurotus cystidiosus*, an edible mushroom in rats

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ABSTRACT

The antinociceptive potential of *Pleurotus cystidiosus*, an edible mushroom (family: Tricholomataceae) was investigated in male rats (doses used: 125, 500, and 1000 mg/kg) and female rats in the di-oestrous stage using the standard hot plate and tail flick tests. In the hot plate test, the reaction time was significantly ($P < 0.05$) prolonged in male rats after 2 h of administration (18 % mid and 93% high dose). The di-oestrous female rats also showed significant ($P < 0.05$) prolongation in the reaction time on the hot plate test (22 %) upon administration of the high dose. This antinociceptive activity had the peak effect at 2 h in male rats and the activity was dose dependent ($r^2 = 0.81$, $p < 0.05$). In contrast, none of the rats showed an increase in reaction time in the tail-flick test. The acetone and methylene chloride extracts of *P. cystidiosus* was also orally administered to the rats and antinociceptive activity investigated. Only the acetone extract showed a marked and significant increase in reaction time on the hot plate test at 2 h (23% mid and 49% high dose). We conclude that the acetone extract retain the pain alleviating properties, however the whole mushroom has a better effect with 1000 mg/kg dose.

KEY WORDS : Antinociception, Hot plate, Morphine, Pleurotus cystidiosus, Tail flick method

INTRODUCTION

Pleurotus cystidiosus (family: Tricholomataceae) commonly known as Abalone is an edible mushroom; a popular delicacy among Sri Lankans. These mushrooms are large and fleshy, and grow on tree trunks or stumps in shelf-like layers. The pileus is shell-shape. The young cap is deep brownish. The surface is smooth and moist with the edge turned downwards. The stipe is dark brown. *P. cystidiosus* differs from the other members of Tricholomataceae (1) in that its stipe is not central but lateral, excentric or even absent.

Mushrooms belonging to the genus *Pleurotus* have been investigated in search of biologically active compounds. Blood cholesterol lowering properties of *P. ostreatus* is reported (2, 3, 4) in the literature. The antioxidant property of the same mushroom is also reported (5). An antifungal peptide has been isolated from *Pleurotus eringii* (6). Anti-inflammatory activity of *Pleurotus florida* has been reported (7). We have reported the anti-nociceptive activity of *P. ostreatus* in our earlier study (8).

A possibility thus exists that *P. cystidiosus* may also possesses antinociceptive activity. The aim of this study was to evaluate antinociceptive potential of *P. cystidiosus*. This was tested in rats first with a freeze dried mushroom and then with different solvent extracts of the mushroom.

MATERIALS AND METHODS

Animals

Healthy adult male Wistar rats (weight: 230-250g) were used in the study. The animals were kept in standardized animal house conditions (temperature: 28-31^{0}C, photoperiod: approximately 12 hours natural light per day). All rats had access to water and pelleted food (Vet House Ltd., Colombo, Sri Lanka).

Animal experiments were done in accordance with the internationally accepted principles for animal use and care and rules of the Faculty of Science, University of Colombo.

Preparation of an oral suspension from Mushroom

Fresh *P. cystidiosus* mushroom was collected from a farmer and the identification and authentication was performed by Mr. A.R. Marashinghe, Mushroom development and training centre, Export development board, Ratmalana. A voucher specimen (P. cys. 2006) is deposited at the research laboratory, Department of Chemistry, University of Colombo, Sri Lanka. Fresh *Pleurotus cystidiosus* (1 kg) was washed with water to remove any soil particles, freeze dried (LFD-600EC,