

# Toxicological Evaluation of *Lentinus squarrosulus* Mont. (Polyporales), an Indigenous Nigerian Mushroom

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*Lentinus squarrosulus* Mont. (Syn. *Lentinus subnudus* Berk.) is a highly prized Nigerian mushroom, which is appreciated for its meaty taste and texture. The mushroom is of immense value in traditional medicine, and it features considerably into Nigerian folklore and mythology (Oso, 1977). Fasidi and Kadiri (1990) showed that mature *L. squarrosulus* fruit bodies are rich in ascorbic acid and amino acids, and protein is their most abundant nutrient. Fasidi and Kadiri (1993), Kadiri (2002), and Kadiri

and Arzai (2004) were able to cultivate fruit bodies of *L. squarrosulus* successfully on uncomposted and composted agricultural wastes and woodlogs of tropical hardwood plants.

Defatted powdered samples of mushroom fruit bodies, dissolved in methanol and centrifuged, were found to show an absence of amatoxins and phallotoxins, following the method of Wieland and Faulstich (1978) and using  $\alpha$ -amanitin and phalloidin as standards. In the oral toxicity test of mushroom water

extracts, three different dosages were used—namely, 60 g/kg, 90 g/kg, and 120 g/kg per rat body weight. The dosages were concentrated, diluted to 30 mL each, and given to 6-week-old rats as drinking fluid in six-rat replicates per dosage. The control rats were given 30 mL of distilled water each as drinking fluid. The treated and control rats were provided with 12 g of rabbit pellets per animal per day. Throughout the 35-day study period, the treated and control rats did not show clinical symptoms or death.

In the intraperitoneal toxicity test, which was carried out according to the method of Block et al. (1955 a,b) and Kadiri et al. (1996), Wister rats, aged 6 weeks and weighing 70–75 g, were observed for 1 week prior to the toxicity test. The water extracts of 60 g/kg, 90 g/kg, and 120 g/kg mentioned above were concentrated by evaporation to 1.5 mL. One rat was used for the application of each dosage level, and the treatment was repeated five times using five rats. The 1.5 mL dosages of the different water extracts of 60 g/kg, 90 g/kg, and 120 g/kg were administered into the rats by injection intraperitoneally. The control animals consisted of three groups. The first group was injected intraperitoneally with 0.5 mL of 1 mg/mL  $\alpha$ -amanitin solution, the second group with 0.5 mL of 4 mg/mL phalloidin solution, and the third group with 0.5 mL of sterile distilled water. Phalloidin and  $\alpha$ -amanitin are lethal mushroom toxins.

The treated and control rats were given 100 mL distilled water and 12 g of rabbit pellets per animal per day. During the 35 days of experimental study, the treated and control rats were observed for clinical symptoms or death, the weights of rats that died during the study were recorded, and the surviving rats were weighed at the end of the study period.

Rats injected with phalloidin and  $\alpha$ -amanitin died on the first and second day, respectively, whereas rats injected with distilled water and mushroom water extracts did not die during the 35-day study period. Phalloidin and  $\alpha$ -amanitin injected rats showed loss in body weight, while rats injected with extract of *L. squarrosulus* showed a gain in body weight.

These results of increases in fresh weights of rats given oral and intraperitoneal toxicity tests, and the death of rats injected with  $\alpha$ -amanitin and phalloidin indicate that the constituents of *L. squarrosulus* are nontoxic. In conclusion, *L. squarrosulus*, which historically has been known to be edible as food and ethnomedicine, and in the present study is confirmed to be nontoxic, is, therefore, recommended as an edible mushroom.

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