



EFFECT OF THIOSULPHATE ORAL ADMINISTRATION ON GAMETOGENESIS OF THE SLUG, *LAEVICAULIS ALTE*.

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Abstract

The Slug, *Laevicaulis alte* is predominant in the Umarched and allied region of Yavatmal district of Maharashtra. Thiosulphate fed to slug through food, in the present investigation results are obtained i.e. over spermatogenesis and over oogenesis in the ovotestis of the slug. The overcrowding population of the slug found to be increased due to the fertility of the soil by its feces because the slug is voracious feeder. This considerable increased in the fertility of the soil would proved beneficial to the farmers of this region who have been traditionally practicing the farming of piper betel, Nageli pan crop.

Keywords: Thiosulphate, ovotestis, Overgametogenesis and fertility of soil.

Introduction

The present study deals with effect of thiosulphate on gonads of the slug which shown an over spermatogenesis and an over oogenesis respectively. Being voracious feeder, the slug consumed much quantity of mixed food there by an addition of fecal matter in the soil and gross leads to increase in the fertility of the soil which is boon for the farmers of this region.

Material and Methods-

At the end of the pre reproductive period, slugs of 6 to 9g. of weight were ascertained from its hidden places of aestivation during the month of May 2011. Slugs having hump on its back were preferably selected and

bought to the laboratory along with the same soil from where they were collected. The relative humidity (85%) and the ambient temperature (25.27°C) of the soil were maintained and the same were determined with the help of portable soil analysis kit. By maintaining similar natural atmospheric condition in an terrarium filled with the same soil, the slug, *L. alte* were acclimatized for two weeks in 18:6, dark:light regimen. They were fed with leafy vegetable like spinach oleraceae (palak) and humus of the soil. The acclimatized slugs were fed regularly and maintained in two separate groups i.e. control and experimental slugs respectively, in the two different terraria. The controlled were fed with leaves of spinach oleraceae (palak) whereas the experimental slugs were fed with leaves of spinach oleraceae (palak) soaked in thiosulphate (effects of sub-lethal treatment 20% and 60% equivalent to Lc 50/24). The thiosulphate dose was calculated and administered by 0.1 mg/g body weight of the experimental slug. Slugs maintained in terrariums were also exposed to 30 days at similar photoperiod. After a month, they were sacrificed during experimentation. To investigate the effect of thiosulphate on the brain and neuro secretory A and B celled types and ovotesties in terms of the process of spermatogenesis and oogenesis. Intended to investigate, ovotestis and brain were taken out from the sacrificed slugs. The remude organs of the experimental and controlled slugs further processed through the series of micro-

techniques and 10 micron thick sections were obtained, stained in Mallory (1994) triple stain and gomori (1941) and for brain, Alcian blue and yellow were used.

Result and discussion-

Table 1 showed the magnitude of spermatogenesis and oogenesis in slug, *L. alte*

	Spermatogenesis	Oogenesis
Control	Normal spermatogenesis Underspermatogenesis	Normal oogenesis Underoogenesis
Experimental	Normal spermatogenesis Overspermatogenesis	Normal oogenesis Overoogenesis

In control slugs spermatogenesis and oogenesis of two magnitudes were to be found. They were underspermatogenesis and normal spermatogenesis as well as underoogenesis and overoogenesis.

In experimental, overspermatogenesis and overoogenesis were found to be normal in few cases. The overspermatogenesis may be due to effect of thiosulphate, fed to animal. Oocytes, spermocytes, spermiocytes, spermmother cells showed considerable increase in their number in the ovotestis.

Anatomical studies have demonstrated that neuron in the named cluster send axonal projections to the reproductive structures of the slug, while electrophysiological studies have linked activity in their neurons to the motor (Chase 1986).

Present neurosecretary investigation revealed that there was considerable increase in the length and number in oval B cell type filled with neurosecretary materials in the brain of thiosulphate fed slugs. Neurosecretary material of B cell type increased spermatogenesis (Kulkarni, 1980) and their oversecretion might lead to overspermatogenesis.

Oogenesis is also under the control of brain hormone. In the slugs residing in natural habitat, oogenesis is normal. It is due to the scanty secretion of brain hormone under the influence of tentacle inhibitors (secretion). But if the tentacle of the same slug were ablated, oogenesis found to be enhanced to over oogenesis in the slug indicated that there appeared to be non involvement of tentacle inhibitors (secretion) that produced much of the brain hormone for over oogenesis (Kulkarni 1989). In case of oogenesis in ovotestis of *L. alte*. in present investigation it seemed that

thiosulphate performed the same role in the role in the animal.

Thiosulphate, in the present investigation, enhanced the process of gametogenesis through the indirect effect of increased neurosecretion in brain. Its presence in the brain could not be proved experimentally because it might be eliminated from the body or oxidized to sulphate or incorporated into endogenous compound. This assumption could be supported by the investigation presently made by team of hope pharmaceuticals.

Overcrowding populations of slug, *L. alte* in the soil near sulphur spring might be due to abundance of sodium thiosulphate in that particular soil. Our observation about the slug *L. alte* got the support of investigation bought out on [www.era.gov\(2003\)](http://www.era.gov(2003)) which did indicate that the sodium thiosulphate is the source of sulphur in such a region.

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