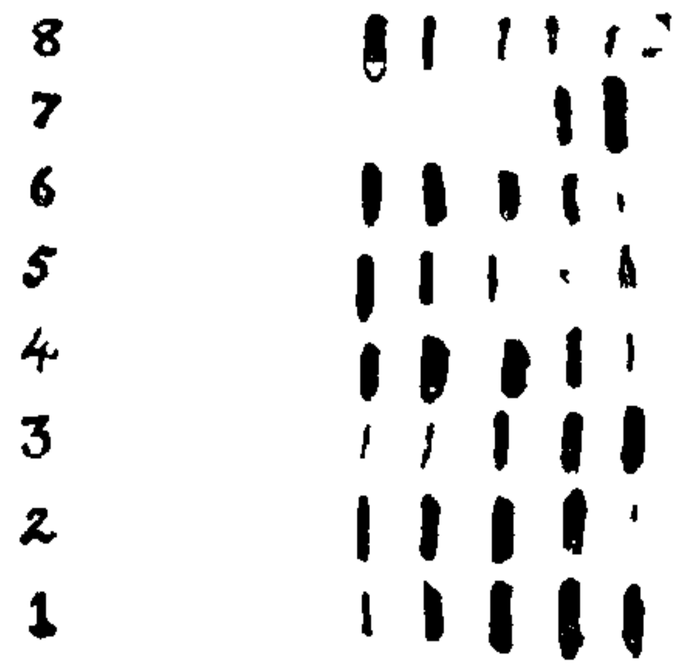

LDH—1 2 3 4 5 Isoenzymes
1, 3, 7—Brain tumor tissue.
2, 4, 6—Non-neoplastic tissue.
5, 8—Murine standard LDH.

FIG. 1. 1, Meningioma; 2, TB meningitis; 3, Secondary tumor in brain; 4, Ischemia; 6, TB meningitis; 7, Medulloblastoma; 5 and 8, Authentic LDH standard.

As is evident from Table I the LDH_1/LDH_5 ratio brings out the difference between the various types of lesions better than the H/M ratio. In non-neoplastic lesions the H/M ratio is between 1·5 to 2·5, while in neoplastic lesions it varies from 0·8 to 4·8 with no appreciable demarcation as observed in the case of LDH_1/LDH_5 ratio. Hence, we prefer to use LDH_1/LDH_5 ratio as a biochemical index in our future studies.

From our study, it could be seen that this ratio could be used as biochemical adjunct to histopathological diagnosis of different brain tumors. Secondly, a correlation of the biochemical parameters with the histopathological features provide an insight into the biological behaviour of various lesions, which is not always possible by either of the methods of investigation in isolation. Though the number of cases used in this study is small, the potential of this bipronged approach of investigation in understanding the biology of tumor and differentiating them into various categories is indicated. The study is extended to a larger number of CNS tumors and other non-neoplastic neurosurgical states.

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INFLUENCE OF STORAGE TEMPERATURE ON SCLEROTIAL GERMINATION OF *CLAVICEPS FUSIFORMIS*

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Claviceps fusiformis Loveless, causing ergot of pearl millet [*Pennisetum typhoides* (L.) Leeke], is a serious pathogen in the arid and semi-arid tropics. A few workers have reported sclerotium germination under the field[1] and laboratory[2,3] conditions. However, no work has been done on the effect of different storage temperatures on the germination of sclerotia. Under the present investigation an attempt has been made to test the possibility of enhancing the germination of sclerotia by subjecting them to different storage temperatures.

Fresh sclerotia of *C. fusiformis* collected from rabi pearl millet crop of 1980 were used in the experiment. One set of sclerotia were bagged in polythene covers and kept at −10° C, 0° C, 15° C, 23 ± 1° C, 25° C and 37° C for 8 weeks. Another set of sclerotia was kept at 15° C, 23 ± 1° C, 25° C and 37° C and were chilled for 24 hours once in 4 weeks at 0° C. After 8 weeks 75 sclerotia were removed from each storage regime and plated 25 sclerotia/plate on water saturated coarse sand in perspex Petri plates. The plates were incubated at 23 ± 1° C with 12 h/12 h cycles of artificial day light (ADL) and darkness.

All storage temperatures, except −10° C, 0° C and 15° C (both in chilled and non-chilled), induced the sclerotia to germinate. Maximum germination (81·33%) was recorded in sclerotia stored at 37° C without chilling (Table I). The lower the storage temperature lesser was the germination percentage. In all cases, chilling reduced the sclerotial germination. This shows that *C. fusiformis* is well adopted to high temperature conditions prevailing in the semi-arid tropics.

The number of days required for sclerotium germination varied from 16–38 days (Table 1). The germinating sclerotia showed white tuft of mycelium from which region, the stipes with the clavae started emerging. The average number of clavae per germinated sclerotium varied from 1·16–3·40. The number of clavae per germinated sclerotium ranged from 1–8.

In another experiment, newly collected sclerotia were incubated for germination as described earlier. It was observed that only 3·5% of the sclerotia germinated, that too after 60 days of incubation. This may be due to the dormancy of the sclerotia. However, it

TABLE I

Influence of different storage temperatures on germination of sclerotia of Claviceps fusiformis

Storage temperature (° C)	Range of days required for germination after start of incubation	Average No. of clavae per germinated sclerotium	Sclerotial germination (%)
−10	..	..	..
0	..	..	..
15	..	..	..
23±1	16–38	2·60	44·00† A
23±1*	16–25	1·50	21·33 B
25	16–35	3·25	50·66 A
25*	16–25	3·20	30·66 C
37	18–28	3·40	81·33 D
37*	18–30	3·00	60·00 E

* Subjected to chilling.

† Figures represent the per cent germination calculated from 75 sclerotia ; Figures followed by the same letters are not significantly different at $P = 0{\cdot}05$ according to Newman–Keuls multiple range test[6].

appears as though the sclerotia of *C. fusiformis* may not have a long dormancy period.

In *Claviceps purpurea*[4] and *C. paspali*[5], which are predominant in temperate climates, a minimum cold (5°–10° C) moist period of about 2 months is found to be the most favourable preconditioning treatment to induce sclerotial germination. The results obtained here show that *C. fusiformis* sclerotia germinate better when stored in dry conditions and at high temperature (37° C) without chilling.

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EFFECT OF ALLATECTOMY AND BRAIN CAUTERIZATION ON THE ACTIVITY AND DISTRIBUTION OF THREE DIGESTIVE ENZYMES IN THE GUT LUMEN TO *SCHIZODACTYLUS MONSTROSUS* DRURY.

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THE secretion of digestive enzymes is believed to be controlled by several factors, *viz.*, *hormonal*, *nervous* and secretogogue[1–4]. Wigglesworth[5–6] showed that corpora allata induced the rapid digestion of intestinal contents but Dadd[7] observed that midgut protease activity was stopped in decapitated *Tenebrio*. Thomsen and Moller[8] also advocated that protease activity was lowered in animals deprived of their median neurosecretory cells. In view of the contradictory findings, the present study has been carried out to determine the effects of allatectomy and brain cauterization on the activities of three major proteolytic enzymes in the gut lumen of *S. monstrosus*.

Emerging adults of *Schizodactylus monstrosus* were used in this experiment. The insects were first anaesthesized by ether vapour and the corpora allata were surgically removed by incising the cervix region and the operated area was sealed by melted wax. Cauterization of the brain was performed following the technique of Girardie[9]. The insects were kept singly in a glass jar (as the insects have some cannibalistic habit) and were provided with nymphs of cockroaches and grasshopper as food and were sacrificed 24 hours after operation. The activities of the proteinase, trypsin and chymotrypsin were determined by the methods of Snell and Snell[10] Malis *et al.*[11] and Webster and Prado[12] respectively. Bovine serum albumin (BSA) was used as substrate in the first method while in the second and the third, the substrates used were benzoyl arginine-*p*-nitroanilide (BAPN) and N-benzoyl-L-tyrosine ethyl ester (BTEE). Tissues were homogenized in glass-distilled water under ice-cold condition.

Experimental results reveal that corpora allata and the neurosecretory cells of the brain exert profound influence on the quantitative levels of these three enzymes in each part of gut lumen. All the enzymes were found to decrease considerably in both allatectomized and brain cauterised individuals, the effects of latter being more pronounced. But this declining trend appeared to be drastic when both corpora allata and brain were excised (Table I).

Hormones in insects play an important role in the secretion and synthesis of digestive enzymes in general and protease in particular, the activity of which is