166% respectively, in comparison with the control on basal medium. The data on the per cent of dry weight reveals that 10^{-6} *M* BIA is more similar to 2×10^{-6} *M* IAA, while 10^{-5} *M* BIA has lesser effect on the hydration. At optimal concentrations, BIA seems to inhibit the chlorophyll synthesis in respect to the IAA.

On the basis of the results obtained, it can be concluded that BIA acts not only on the cell enlargement as previously demonstrated[3], but also on cellular proliferation, which confirms the close analogy existing with the IAA, at very similar concentrations.

These results represent a further contribution to the characterization of the biological activity of the benzisotiazole compounds.

Riassunto. L'acido 1,2 benzisotiazol-3-ilacetico (BIA) ha mostrato una forte azione sulla proliferazione cellulare di espianti di tuberi dormienti di *Helianthus tuberosus*, sostanzialmente simile a quella indotta dall'acido indol-3-acetico.

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The Probable Basis of Adaptation in Mosquito Larvae

The role of predation as a major factor in natural selection has gained considerable importance, especially since the report of apostatic selection by CLARKE[1]. A number of papers have appeared on the influence of colour of the prey in predation. Individual fishes are known to exhibit strong preference for particular colours of prey (CLARKE, personal communications). It is the purpose of this note to point out such selective feeding mechanisms exhibited by 2 major predators on mosquito larvae, *Gambusia affinis* and *Culex* (*Lutzia*) *raptor*, and to compare the adaptive responses of 2 mosquito species with the available data on their genetic variabilities.

Given the choice in experimental plots, *Gambusia* feed preferentially on the larvae of *Aedes aegypti*, *Anopheles stephensi* and *Culex fatigans* in this order (Table I). However, when certain marker strains of the prey are used, feeding preference is to yellow or golden colored larvae irrespective of the species involved. From Table II, it may be seen that the 'golden' of *Culex fatigans* is preferred over the 'black' mutant of *Aedes aegypti* by *Gambusia*. Such 'nonspecies specific preference' to colour has been reported in *Culex* (*Lutzia*) *raptor*[2]

Table I. Feeding behaviour of *Gambusia* in a 'choice' experiment involving the 3 species of mosquito larvae

	Initial No.	12 h	24 h	36 h	48 h	Total consumed
A. aegypti	200	168	141	107	85	115
An. stephensi	200	187	176	167	158	42
C. fatigans	200	194	189	183	176	24
G. affinis	6	6	6	6	6	0

Table II. Feeding behaviour of *Gambusia* in a 'choice' experiment involving mutants of *Aedes* and *Culex*

	Initial No.	12 h	24 h	36 h	48 h	Total consumed
A. aegypti (black)	200	189	181	160	161	39
C. fatigans (golden)	200	167	134	98	69	131
G. affinis	6	6	6	6	6	0

also. These observations suggest that natural selection, through predation, acts unfavourably on the pale mutant forms since they are predated upon preferentially. On the other hand, the darker colour which has a protective adaptation is of selective advantage in field populations of mosquito larvae where the incidence of predation is high.

Such incidences of visual selection by the predators could exert apostatic adaptation in the prey[1], and it has been recently concluded that, under specific conditions, a polymorphic population may have a larger number of individuals than a monomorphic one[3]. Colour polymorphism is very well known in mosquitoes. *Aedes aegypti*, for example, is known to exhibit a wide spectrum of colour variations from pale yellow forms at one end to very dark ones at the other. The theory of domesticity and paleness[4] accounts for certain probable factors tending the selection of pale colour in the laboratory; but data on the probable causes of favourable selection of dark colour in the field are not available. It is generally known that larvae freshly collected from the field are darker than the laboratory strains. The maintenance of such polymorphism by selection could be brought about by keeping certain gene combinations in particular ratios of selective advantage to others[5]. In other words, the response to such selection pressures would depend to a major extent on the genetic variability and hence adaptability of the species involved. In *Aedes aegypti*, a balanced polymorphic system for loci *y, s, ds,* and another mutant Gold which are linked fairly closely has been suggested[6]. The maintenance of different advantageous colours in varied selective pressures in different populations could be accounted for by such a polymorphic system. However, even such balanced polymorphic loci require different fitness values for various genotypes[7] and the accommodation of such systems in animals that have a higher genetic variability could be more directly proportional.

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The relatively smaller size, the vertical position they occupy in water and the tendency of clumping of *Aedes aegypti* larvae is reported to account for a greater selective disadvantage for this species[8]. This could, however, be well compensated for by the comparatively higher rate of genetic variability they posses. The highest record of mutation load for *Aedes aegypti* is 2.96[9], while that of *Culex fatigans* is only 0.7[10]. Hence, the maintenance of a balanced species frequency is expected in natural populations despite such preferential feeding habits of their predators. If one removes mutation rate and adaptation as an explanation, it is difficult to explain the balanced species polymorphism, despite such selective predation, between *Aedes* and *Culex* in areas of natural populations where they co-exist.

These findings have implications on the biological control programmes of mosquitoes, since many laboratory marker strains stand the danger of being selectively fed upon in field experiments[11].

Résumé. Les modes d'alimentation préférées de deux prédateurs, *Culex* (*Lutzia*) *raptor* et *Gambusia affinis* sur les larves de certaines espèces de *Culex*, *Anopheles* et *Aedes* sont étudiés au point de vue de leur valeur pour la survie dans la nature. Une corrélation entre la variabilité génétique des espèces prédatrices et l'adaptabilité est établie. On propose de modifier pour le contrôle biologique.

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A Note on New Chemical Compounds Isolated from a Fungus Hitherto Unknown

A sturdy millet *Paspalum scrobiculatum* Linn. is cultivated in the Western ghats of Maharashtra in India and also in other areas of the country as a food grain. This grain is consumed as food by the poorest section of the rural population. The plant has been wellknown for its toxicity to animals and humans since many centuries[1]. Bhide and Aiman[2] reported the tranquilizing effect on animals of the ethanol extract of the total grain. Ramkrishnan and Sundaram[3] observed the occurrence of Claviceps with this millet, which was designated as *Claviceps paspali*, Ster. and Hall. Ramkrishnan[4] found *Sorosporium* and *Paccinia*, which were designated as *Sorosporium paspali*, Mcalp and *Paccinia substiata* Febs. Rutti. The samples of the grain cultivated in Ratnagiri and Kolaba districts of Western ghats of Maharashtra were collected after an initial survey in the field by Pendse et al.[5]. A number of samples were found to be infested by fungi. A number of fungi were isolated from the ear-heads of the collected samples. The more common and predominantly occuring fungus was further characterized, identified taxonomically as *Phomopsis* sp. and designated as *Phomopsis paspali*. The species differed morphologically and also chemically, producing new mold metabolites, from other species of the same genus found on other host plants.

The fresh unpolished grain with husk intact of *P. scrobiculatum* was collected in November–December from fields, when rainfall in the area was quite normal. It was treated with mercuric chloride (2%) for 0.5 min and washed with distilled water, till it was free from mercuric chloride. The washed grain was incubated on 2% Potato-dextrose-agar solid medium at 24–28 °C. The white mycelium of the fungus appeared within 2–3 days and the growth was fairly rapid, with the appearance of pycnidia within 8–10 days. It could also grow equally well on liquid potato-dextrose medium or 4% malt. After 15–21 days, the total culture was extracted with ethanol at room temperature for about 4–6 days and the solvent evaporated at room temperature[6]. The solid dried residue was extracted by solvent, such as ether or chloroform, for 48 to 72 h. After evaporation at room temperature, the residue showed 2 spots, as I and II, in the thin layer chromatogram (TLC) (silica gel/chloroform-methanol 95:5, vanilline in 50% phosphoric acid as developing agent).

The crude ether extract was then subjected to adsorption chromatography for the separation of the compounds. The procedure adopted was as follows. Chromatography of the ether extract (1.978 g) on silica gel (80 g – Merck 0.05–0.2 mm) with di-isopropyl ether as solvent yielded 1.026 g of the less polar compound I from the earlier fractions. Recrystallization from di-chloromethane/di-isopropyl ether yielded pure I as colourless needles, m.p. 268–269 °, $[\alpha]_D^{25°} = +63$ °C (C = 0.103, methanol). The later fractions gave a mixture of I and II, which was rechromatographed in an analogous manner. Thus, 286 mg of crude compound II was obtained. This gave after recrystallization from dichloromethane/ether, 151 mg of compound II as colourless needles, m.p. 161–165 ° (Sintering at 147 °C) $[\alpha]_D^{25°} = +45°$ (C = 0.106, methanol, purity Ca = 98–99%).

From elemental analysis and high resolution mass spectra C30H39N05 (493.2838) was established as a formula for compound I and $C_{28}H_{37}NO_4$ (451.2699) for compound II. The NMR-, IR-, and UV-spectra indicated in compound II, the presence of 1 benzyl group, 1 γ-lactam, 2 secondary and 1 tertiary methyl groups 1 exocyclic doublebond and 2 *trans*-double bonds, 2 secondary and 1 tertiary hydroxy group. Compound I is the monoacetate of II and is hydrolysed with K_2CO_3 in methanol/water (25 °C, 7 h) in almost quantitative yield to the latter compound. The monoacetate I is transformed by treatment with acetic anhydride/pyridine at 25 °C/24 h to a

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