NATURAL TRIPLOIDY IN *BLUMEA FISTULOSA* KURZ (COMPOSITAE)

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BLUMEA Dc., a polybasic genus ($x = 8, 9, 10, 11$) of 50 species[1] which is mainly confined to the Indian subcontinent, is of considerable cytological interest. Detailed cytological studies made on *B. fistulosa* Kurz from different populations of the Pachmarhi hills invariably revealed the chromosome number, $2n = 30$ whereas its South Indian counterpart[3] is counted to have $2n = 18$. On $x = 10$ the Pachmarhi population is triploid, and meiosis is highly abnormal. The number of trivalents (2–5 per PMC), bivalents (5–10 per PMC) and univalents (1–10 per PMC) shows an average frequency of 3.11, 7.53 and 5.60, respectively (figure 1). The most common configuration is $3_{III} + 8_{II} + 5_{I}$ (20.0% PMCs) followed by $3_{III} + 7_{II} + 7_{I}$ (17.8% PMCs) and $4_{III} + 7_{II} + 4_{I}$ (15.6% PMCs). These chromosomal associations are indicative of its segmental allotriploid nature.

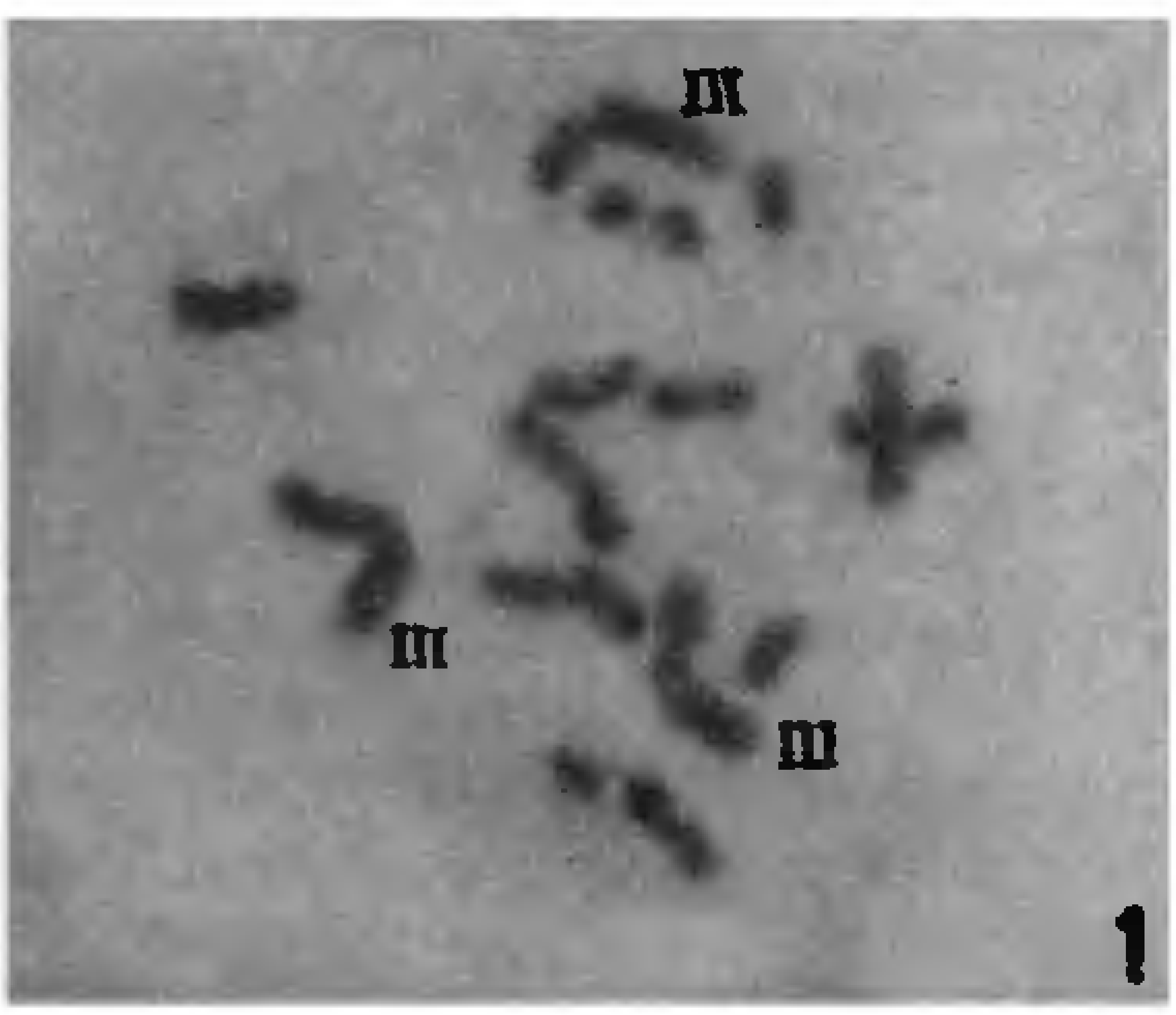

Figure 1. Metaphase I showing $3_{III} + 9_{II} + 3_{I}$.

In most of the cases, meiosis II is circumvented. Microsporogenesis shows the formation of monads (1.5%), dyads (97.3%), tetrads (0.9%) and polyads (0.3%). Consequently, pollen size is quite variable (42.9–11.5 μm). Most of the pollen grains (71.6%) are large in size (42.9–31.2 μ) whereas the rest are of medium (27.3–23.4 μm) to small size (19.5–11.5 μm). About 70% of the pollen grains are well filled and with stained nuclei.

Achene setting is excellent. Preliminary embryological studies made on the triploid shows that the embryo is nucellar in origin. The presence of the same chromosome number in the different populations might indicate the obligate nature of the apomict. Apomixis has also helped *Blumea eriantha* and *B. oxyodonta* in the maintenance of triploids in natural populations[2]. It appears, therefore, that existence of natural triploids in the genus has been facilitated due to its amenability to apomixis.

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FILLET/FOOD CALORIE RATIO AS AN INDEX OF ENERGY ASSIMILATION IN SOME TELEOSTEAN FISH

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THE energy values in the fillet and gut content of some predominantly herbivorous fish were determined to derive a parameter for expressing the biomass in terms of energy unit. Studies on the caloric contents of aquatic organisms from tropical environment have so far been limited[1–4]. Little is also known about the food consumption and energetics of fish. In the present communication fillet/food calorie ratio has been worked out in some selected freshwater teleostean species to examine the energy assimilation and conversion efficiency.

Specimens of *Catla catla*, *Labeo rohita*, *Cirrhina mrigala* and *Puntius stigma* were obtained during the early hours of the day from a local fish pond and investigations carried out during October 1980 to February 1981. Samples of white skeletal muscles (fillet) and contents of alimentary canal were processed to quantify calorific values[5]. For each species, five specimens were analysed. Data pertaining to fillet/food caloric ratio and the average energy in terms of calories/g dry weight in the above specimens are presented in table 1.

TABLE 1

Average energy in fillet and food and the fillet/food calorie ratios (cal/g dry weight) in some freshwater fish

Species	Calories in		Fillet/food calorie ratio
	Fillet	Food	
P. stigma	3791.7 ± 75.97	4014.1 ± 23.04	0.944 ± 0.001
L. rohita	3830.8 ± 48.08	4073.2 ± 77.41	0.942 ± 0.009
C. mrigala	4067.6 ± 176.74	4383.5 ± 172.63	0.924 ± 0.008
C. catla	3757.7 ± 160.74	4828.4 ± 129.81	0.770 ± 0.034

± Standard error of mean.

Inter-specific differences were observed in the total ratio of the calorific content of fillet to food in the gut. The highest ratio was encountered in *P. stigma* (0.944) and the lowest in *C. catla* (0.77). In *L. rohita* and *C. mrigala* the ratios were 0.942 and 0.924 respectively. Evidently, the assimilation of energy nutrients in the body was in the order: *P. stigma, L. rohita, C. mrigala* and *C. catla*. The results show that despite larger intake of food, the energy actually assimilated was smaller in *C. catla*. However, in *P. stigma, L. rohita* and *C. mrigala* the efficiency of conversion of food into flesh was higher and comparatively larger proportion of the foraged items was incorporated in the body. Detailed studies on these aspects are in progress.

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NEUROENDOCRINE CONTROL OF OOCYTE DEVELOPMENT IN *POECILOCERUS PICTUS* FABR. (ACRIDIDAE, ORTHOPTERA)

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YOLK proteins in *Poeciloceurs pictus* are synthesised by the fat body, transported through the haemolymph and sequestered by developing oöcytes[1-3]. The neurosecretory cells and the corpus allatum are involved in this process[4] as in the majority of insects. According to Highnam[5,6] and Girardie[7,8] the cerebral neurosecretory cells as well as the corpora allata are necessary for oöcyte development in orthoptera. In *Schistocerca* it has been shown that the cerebral neurosecretory cells control general protein synthesis of female specific protein or vitellogenin[9-11]. According to Saini[4] cerebral neurosecretory cells control the growth of oöctye whereas the yolk synthesis or vitellogenesis is controlled by corpora allata in *P. pictus*. The median neurosecretory cells have a gonadotrophic effect in *Locusta* according to Girardie[7,12] and Bentz[11] whereas corpora allata exert a gonadotrophic effect in *Melanoplus* according to Dogra *et al*[13,14] These conflicting results arose from experiments in which only one operation *i.e.* either allatectomy or neurosecretory cells cautery has been performed. Interpretations also become difficult because of hormonal interactions rendered by reimplantation or injection of active compounds or extracts[15]. Saini[4] has suggested that cerebral neurosecretory cells stimulate the corpora allata whereas McCaffery and Highnam[15] suggest that the CA hormone stimulates neurosecretory cell activity. Whatever the hypothesis, it is obvious that both the endocrine centres are active at a time.