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Notch affects the development of *Drosophila* macrochaeta through lateral inhibition but that of wing veins through induction.

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We irradiated first instar larvae of *Drosophila melanogaster* with either the genotype $w^a\ Ax^{59d}\ fl/M(1)o^{sp}$ or $w^a\ Ax^{59d}\ ct/\ M(1)o^{sp}$ with 1000 R of X-rays in order to get fast-growing homozygous $w^a\ Ax^{59d}\ fl\ w^a\ Ax^{59d}\ f$ or $w^a\ Ax^{59d}\ ct/\ w^a\ Ax^{59d}\ ct$ clones on the *Minute* background. When investigating these clones, we found firstly that patches homozygous for the antimorphic gain-of-function allele, Ax^{59d}, of the *Notch* gene, and marked with *forked*, carried few, if any, sensory macrochaeta, but macrochaeta could develop along the clone borders. Secondly, we found that wing vein gaps homozygous for Ax^{59d} , marked with *cut*, were significantly longer (86 ± 36 hundredth of millimeter) than the gaps in the veins of the opposite wing (57 ± 27) (F = 9.533; P = 0.003). Further we observed that wing vein gaps extended slightly longer on the dorsal surface than on the ventral surface of the wing.

These results indicate that the effect of the *Notch* gene on the development of the sensory macrochaeta is based on lateral inhibition (which fact is already well-established), but the effect of *Notch* on the longitudinal growth of the wing vein is of inductive nature, which is a new observation.

In addition, as has also been observed earlier, we show that the development of ventral veins seems to be dependent on the inductive action of the dorsal surface veins.

Effects of *Penicillium roqueforti* on some growth parameters of *Drosophila melanogaster*.

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Abstract

In this work, the effects of *Penicillium roqueforti* filtrate (PRF) on development, fecundity and dominant lethal mutation of *Drosophila melanogaster* have been investigated. For this purpose, different concentrations of *Penicillium roqueforti* filtrate (50, 100, 150 ppm) were added to the standard medium of *D. melanogaster*. The experiments demonstrated a significant increase in the mortality of the F1 generation and decrease in the number of progeny.

Introduction

Fungal contamination in laboratory *Drosophila* cultures is an undesirable condition. But, unfortunately, fungal contaminations by some mold genera, especially *Penicillium* and *Aspergillus*, have been observed although much effort has been spent for sterilization. It is probable that these molds were transferred to the culture medium by the extremities of adult individuals. Furthermore, it was shown that some secondary metabolites such as patulin, citrinin, ochratoxin A, roquefortine, rubratoxin B and penicillic acid of these molds may cause acute and chronic toxicity, especially to the kidney and liver tissues of rat, guinea pigs, mice and cockerels (Saito *et al.*, 1971; Cole *et al.*, 1972; Scott *et al.*, 1976). These findings caused new investigations on the effects of these metabolites on the developmental stages of *Drosophila melanogaster* and it was found that some extracts and metabolites of *Aspergillus* and *Penicillium* decreased survival of the larvae of *Drosophila hydei* and prolonged their development (Cole and Rolinson, 1972; Hodge and Mitchell, 1997). Similar effects have also been observed in *Spodoptera exigua* larvae (Boucias *et al.*, 1994). On the other hand, it was reported that as a result of applications of some chemicals such as dithane M-45 and ethyl methane sulphonate (EMS), the mortality has been observed usually at the early stages of the development (Vasudev and Krishnamurthy, 1982-1983; Ivanov, 1998). In addition, simplicissin obtained from *Penicillium* cf. *simplicissimum* is known to have an inhibitory effect on pollen growth of *Camellia sinensis* (Kusano *et al.*, 1997). But, no research on the effect of the extract of *Penicillium roqueforti* on the development of *D. melanogaster* was found. The aim of this research is to investigate the effects of the extract of *P. roqueforti*, which frequently contaminates our *D. melanogaster* cultures, on the development of *D. melanogaster*.

Materials and Methods

Organism:

Drosophila melanogaster Meig (Diptera: Drosophilidae) Oregon-R strain was used in the investigation. This is a laboratory wild type stock adapted into laboratory conditions by intermating