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The Effects of Homologous Carbamates on the Respiratory Metabolism of Blocked and Active Embryos

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in the wound aperture, consisting of agglutinated blood cells. Blood serum filters through this structure and hardens by evaporation of water on contact with air, thus sealing the wound. A brown deposit is formed in the clot and in the surrounding zone of injury. Pycnosis takes place in adjacent tissues. A further agglutination of blood cells follows. The hypodermis cells of the adult enlarge and assume a condition comparable to that found normally in the nymph. These cells begin secretion of materials similar to those found in the endocuticula. The blood cells undergo differentiation and elaborate a type of scar tissue in and about the wound area. The cells of the hypodermis proliferate and migrate in between the body wall and the newly formed connective tissue, thus restoring continuity between the broken layers of epithelium. New endocuticula is then elaborated by these cells at the point where the body wall has been broken.

Mechanical injury to the tissues of the body wall of the grasshopper will activate other tissues for some distance from the wound and cause agglutination of blood cells which differentiate and produce scar tissue. The rate of repair, within certain limits, is greater in large wounds than in small wounds.

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THE EFFECTS OF HOMOLOGOUS CARBAMATES ON THE RESPIRATORY METABOLISM OF BLOCKED AND ACTIVE EMBRYOS

GUY M. EVERETT

The effects of ethyl, n-propyl, and n-butyl carbamate on the respiration of blocked (diapause) and active (postdiapause) grasshopper embryos have been studied.

The three compounds are essentially similar in their narcotic action.

The oxygen consumption of active embryos is depressed approximately 50 per cent (to the diapause level) by 0.25 M ethyl carbamate or 0.025 M n-butyl carbamate. The blocked embryo is depressed only 10 per cent.

The rates of oxygen consumption expressed as cu. mm. oxygen per embryo per hour for morphologically similar blocked and ac-

tive embryos show that concentrations up to 0.025 M n-butyl carbamate have a slight stimulating effect on diapause respiration but reduce the respiration of the active embryo to the diapause level. In concentrations of 0.025 M and greater, both active and blocked embryos are depressed to the same rate of oxygen consumption.

Reversible concentrations of carbamates are antagonized completely by 12.5×10^{-5} M methylene blue, the oxygen uptake of narcotized postdiapause embryos being restored to its normal level, and the narcotized diapause embryo being stimulated to the postdiapause level.

The dinitrophenol stimulated respiration of both active and blocked embryos is antagonized by the carbamates.

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THE INFLUENCE OF COLCHICINE ON THE GERM
CELLS OF INSECTS, MELANOPLUS DIFFER-
ENTIALIS AND GRYLLUS ASSIMILIS,
WITH SPECIAL REFERENCE TO
THE CYTOPLASMIC
INCLUSIONS

THOMAS P. DOOLEY

Colchicine injected into the body cavity of insects affects the mitotic process of the germ cells by destroying the spindle. The chromosomes become clumped or scattered depending upon the concentration of the colchicine used. The injections were of .05cc. of concentrations ranging from .5 per cent — .05 per cent solutions. A testis from an animal injected with colchicine often shows numerous giant spermatids. Accompanying this karyokinetic disturbance the mitochondria, which are generally in the form of threads along the spindle fibers during the metaphase and anaphase, fail to assume such arrangement. They are found diffused in the cytoplasm in the form of short rods and granules, instead of the usual threads. The mitochondria affected in a dividing cell may assume an irregular mass in the daughter cells. The Golgi bodies seem to be less affected showing only a slight swelling.

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