

or medulla of the adrenal (or both) are concerned can not be known from the available information. Among the animals that were subjected to vascular ligations there were some in which only the cortex degenerated, the medulla remaining intact. Whether or not functional integrity of the adrenal medulla may be altered yet present a normal appearance histologically is not known. However, the studies that are in progress may yield more definite information concerning the part played by the cortex or the medulla in the apparent interrelationship between the adrenal and parathyroid glands.

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HISTOLOGICAL CHANGES IN THE BONE MARROW OF THE DOG FOLLOWING AMIDOPYRINE ADMINISTRATION

THE suggestion that amidopyrine administration is causative of acute agranulocytosis of human beings has been advanced by Kracke,¹ Madison and Squiers,² Watkins,³ Sturgis⁴ and others. Attempts to cause granulopenia by administering amidopyrine to animals have not been attended by consistent results. Even the prolonged use of relatively large amounts of the drug has, in many instances, failed to cause perceptible evidence of disturbed granulopoiesis. From experiments of this type grave doubt has been cast upon the etiologic rôle of amidopyrine in acute granulopenia in man.

Experiments involving the oral administration of amidopyrine to dogs have been made. A 5 per cent. solution in water (Metz and Company, lot 1433) was employed and 0.3 gram per kilogram of the drug was given daily by stomach tube.

In a series of sixteen animals studied no instance of marked decrease of circulating granulocytes was encountered, although treatment was continued for four weeks or more. Erythropenia of varying degree occurred.

Histological study of the femoral bone marrows of the treated animals, however, revealed striking changes, which gave evidence that the drug does affect the formation of granulocytes, even though not to a degree which is reflected in a materially decreased number of granular leukocytes in the circulating blood. A well-defined suppression of maturation of the hematopoietic elements occurs. Granulocytes are decreased in numbers or almost completely absent. The number of young, relatively

undifferentiated cells is increased. Many erythroblasts and myeloblasts are present, as are cells of an even more primitive type; more adult forms are rare. In certain more advanced cases the orderly arrangement of the bone marrow structure into hematopoietic islands has been disturbed.

From the observations reported it appears that amidopyrine orally administered may exert a toxic effect upon the bone marrow, with little or no evidence of the fact in the circulating granular elements of the blood.

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INSECTICIDALLY INDUCED IMMUNITY IN PLANTS TO SUCKING INSECTS

THE word immunity has been used in different ways and given various meanings by many workers. A recent article by Kenneth S. Chester¹ summarizes what is known in this field regarding plants and he defines immunity in plants as "the capability of withstanding infection acquired by the host either through the introduction of protective chemical substances of biological origin (passive) or through the elaboration of such protective substances in the host as a result of stimulation by the parasite." He states further: "It must be understood that the same principles as apply to the host-parasite relationship apply also to the relation between two symbionts or between a plant and introduced substances of a stimulative nature such as toxins or proteins which if not counteracted or inactivated would have a deleterious effect upon the plant."

Insecticides have been considered until very recently as materials which contained physical or chemical properties which produced toxic effects upon insects directly. It has been a common belief that in order to kill insects which obtain their food by sucking plant juices it is necessary to use insecticides which are known as "contact" materials and which have a direct insecticidal action upon the insect by the liberation of gases or other corrosive and penetrative effect upon the body of the insect. Such materials as nicotine sulfate and pyrethrum are known to produce toxic effects in this way. The plant has not been considered as a factor in insect control and has been given consideration only as it might be injured by chemical materials which were applied in attempting to control insects.

In 1926 experiments were undertaken to control the potato leafhopper (*Empoasca fabae* Harris) on bean and potato. Field experiments soon indicated that certain materials when applied to these plants in

¹ R. R. Kracke and F. T. Parker, *Jour. Lab. and Clin. Med.*, 19: 799, 1934.

² F. W. Madison and T. L. Squier, *Jour. Amer. Med. Assn.*, 102: 755, 1934.

³ C. H. Watkins, *Proc. Staff Meet, Mayo Clinic*, 8: 713, 1933.

⁴ C. C. Sturgis, *Proc. Asso. Am. Phys.*, May, 1934.

¹ *Quart. Rev. Biol.*, 8: 131, June, 1933.