Comments and Communications

Influence of Human Saliva and Blood Serum on Germination and Root Growth

Dvora Yardeni has published an interesting communication (*Science,* July 16, pp. 62–63) concerning the effect of human saliva as a germination inhibitor. That writer claims that human saliva inhibits germination of wheat seeds and particularly the growth of the embryonic radicles. She further states that the degree of inhibition caused by the saliva of the same individuals varied at different times, and that the inhibition of the radicle growth does not depend on sex or age. The present writer calls attention to the fact that pharmacological experiments on the germination of seeds and root growth of seedlings, studied on *Lupinus albus,* were made by him as early as 1922 and announced in 1923 (D. I. Macht and D. S. Lubin. *J. Pharm. exp. Therap.,* 1924, 22, 413). These experiments were performed in connection with studies on menstrual toxin. It was found that not only the saliva, but also the blood serum and various secretions of women in catamenia, are very toxic, both for germination and root growth of *Lupinus albus,* as compared with the saliva, blood serum, and various secretions of the same individuals between menstrual periods. The average root-growth inhibition of *Lupinus* seedlings in 1% solutions of saliva dissolved in plant physiological saline was 15%, whereas the average inhibition of seedlings grown in 1% of menstrual saliva solutions was 47%.

Much more accurate and scientifically reliable results were obtained with blood *sera* because these could be obtained under sterile conditions and without contamination of various elements present in the mouths of human beings. In fact, the above observations were the beginning of extensive researches on the subject of phytopharmacology, by the author and his co-workers, which have led to a number of important medical discoveries, particularly in connection with the diseases of pemphigus, pernicious anemia, leprosy, and trachoma (*J.A.M.A.,* 1927, 89, 753; *J. Invest. Dermat.,* 1947, 8, 171; *J. Philippine Islands med. Ass.,* 1928, 8, 523; *Folia Ophthalmol. Orient.,* 1935, 1, 358; *Protoplasma,* 1937, 27, 1).

More recently, the writer has been engaged in studying the effect of blood sera on the respiration of the germinating seeds of *Triticum* (wheat) and *Avena* (oat) and has found that the toxins of menstruation, pemphigus, and other diseases definitely inhibit oxidation and reduction processes of such germinating seeds.

Kramer and Silberschmidt (*Science,* October 15, p. 410), commenting on the Yardeni article, suggest that perhaps growth hormones in the saliva may explain its inhibiting action on seed germination and root growth.

In this connection we call attention to the fact that the idea entertained formerly in regard to inhibition of root growth by the growth hormones is no longer tenable. It was shown by Macht and Grumbein that the effects of indole acetic, indole butyric, and naphthalene acetic acids on roots of *Lupinus albus* seedlings depend on the concentration of the chemicals employed. Solutions up to one in one billion *do* inhibit growth. When, however, much less concentrated solutions of the hormones are used, there is actually a stimulation in root growth (*Amer. J. Bot.,* 1937, 24, 457).

On the basis of the writer's experiences, the inhibiting properties of saliva and blood sera may be more appropriately ascribed to some unknown toxin or toxic substance in those fluids rather than to a growth hormone.

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A New Organic Uranium Compound

A new organic uranium compound has been prepared from anhydrous uranium acetate and hexamethylene tetramine.

One hundred cc of an alcoholic solution of anhydrous uranium acetate was added at 24° C to 80 cc of an alcoholic solution of hexamethylene tetramine. The uranium solution contained 2.46% of acetate/100 gm of alcohol; the tetramine solution, 9.5 gm/100 gm of alcohol. The amine was therefore greatly in excess.

When the two solutions were mixed, a yellow ppt formed immediately. This was washed with hot alcohol, dried, and examined.

The substance showed needle-like crystals, decomposed at 185° C, and dissolved in glacial acetic acid, but was insoluble in alcohol. On analysis it gave U, 46.3; N, 9.7. [$(UO_2)(Ac)_2(CH_2)_6N_4$ gives U, 45.02 and N, 10.5.]

Evidently the two components are present in the molecular ratio of 1: 1.

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Dieyema paradoxum von Kölliker, 1849

The Mesozoa comprise one of the most controversial groups in the animal kingdom. The disagreement concerns their structure, life history, method of reproduction, and zoological status. The confusion arising from different interpretations of morphology and development is augmented by errors in nomenclature. Certain of these errors were rectified by Stunkard (*Amer. Mus. Nov.,* 1937, No. 908). Recently, study of the parasites of octopuses has necessitated a review of the literature on members of the family Dicyemidae.

The generic name *Dicyema* was selected by von Kölliker (*Ber. zoot. Anst. Würzburg,* 1849, 2, 59–66), since he first noted that these animals produce two distinct types of embryos, which he designated as "wurmförmig" and "infusorienartig." The two kinds of embryos had been observed and described by Erdl (*Arch. Naturg.,* 1843, 9, 162–167), who regarded them as developmental stages of a single individual. Kölliker studied the parasites found