

These experiences did not indicate any striking influence of this particular *Solanum* on the diabetic state. Fruit from other species of *Solanum* from Siam will be investigated.

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Effect of Sodium Salicylate on Intradermal Reactions of Rabbits.

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Sodium salicylate is commonly used in the treatment of infections, especially those presumed to be due to invasion by streptococcus. The old idea that acute rheumatic fever is due to infection by streptococcus, and the recently developed conception that the disease is involved in a process of allergy to streptococcus, stimulate a study of sodium salicylate in relation to allergy to streptococcus.

In this study rabbits were inoculated with cultures of a strain of *Streptococcus hemolyticus* of low virulence. The injections were made into one of the knee joints, 0.1 cc. of broth culture being used. For intradermal tests, 0.1 cc. of filtrate from a 5-day culture in Harley's medium was used. Areas near the spine were used for inoculation. All animals were tested for native reactivity to the filtrates before being employed in the experiments. Fresh animals giving positive dermal reactions were discarded. In the use of sodium salicylate, 0.2 gm. per kilo in 5% aqueous solution were given intravenously. The injections were made slowly. Injections were made daily.

Preliminary studies showed that following the intra-articular injection of streptococci, purulent arthritis invariably resulted and persisted until the death of the animal. Blood cultures were rarely positive during the life of the animal unless an intercurrent disease such as "snuffles" intervened. When this occurred, hemolytic streptococci were found in the blood at autopsy. Ten days after arthritis was established, positive intradermal reactions were always present.

The conditions of the experiment were severe due to the nature of the infection and the death rate was high in all series. This did not seem to be considerably influenced by the use of sodium salicylate.

In the first series of animals 15 controls gave strongly positive intradermal reactions 10 days after the production of arthritis, and 8 animals, given sodium salicylate 24 hours before the production of

arthritis and at 24 hour intervals thereafter showed slight or no intradermal response. At this point the results of studies made by Griffith¹ of the reciprocally antagonistic action of benzoic acid and glycine on the growth of white rats, were considered. According to this author the deleterious effect of benzoic acid on the growth of young white rats was removed by adding glycine to the diet. The amount of glycine used was 0.47 gm. per kilo, in 4% aqueous solution. Groups of rabbits were therefore selected, of which one was composed of controls, one of animals receiving sodium salicylate intravenously, one of animals receiving glycine intravenously, and one of animals receiving sodium salicylate and glycine freshly mixed in proper solutions. In this experiment, 16 control animals gave strongly positive reactions; 28 animals receiving sodium salicylate, gave slight or no reactions; 4 animals receiving glycine alone gave strongly positive reactions, and 16 animals receiving mixtures of glycine and sodium salicylate, gave strongly positive reactions.

This effective suppression of so-called allergic reactions by sodium salicylate depends on factors as yet unknown. There is no reason to ascribe this effect to a general depressive action inasmuch as rabbits did not lose weight or appear less healthy while receiving sodium salicylate over a period of 10 days than did controls. Since the dermal reaction is not heightened by the use of glycine alone, the dermal responses obtained in animals treated with sodium salicylate and glycine combined, must be present because glycine neutralizes sodium salicylate *in vivo*. The nature of the dermal reaction itself remains obscure. Whatever the mechanism by which sodium salicylate suppresses the dermal reaction, this mechanism does not affect the nature of the vascular pathology found in these animals. The late proliferative vascular lesions were the same in the various series. When sodium salicylate was discontinued the dermal reactions tended to return, but after 20 days in 7 animals, only a slightly positive reaction was present, while after 50 days only a moderate reaction was present in 4 surviving animals. When sodium salicylate was administered to 4 animals which had well developed dermal reactions the effect was a gradual suppression of the dermal reaction. The experiments thus indicate that salicylates would be more effective in preventing the development of an allergic state following a primary infection than in removing allergy after the primary infection was fully developed.

If acute rheumatic fever is a disease in which the process of allergy is involved then derivatives of salicylic acid might conceivably

¹ Griffith, W. H., *J. Biol. Chem.*, 1929, lxxxii, 415.

be beneficial by interfering with this process of allergy. That this interference is of too little importance to modify the vascular pathology is apparent. By implication, the overlying process of allergy is unimportant and the underlying focus of infection at present reputed to be of streptococcal origin, is very important. In turn, the results of cultures of blood and joints become of great importance—a state of the question now many years old.

From these considerations it seems possible to draw the following conclusions: 1. Sodium salicylate suppresses the allergic dermal reactions of rabbits to filtrates of hemolytic streptococcus. This effect is most definite when sodium salicylate is given before the focus of infection has developed. 2. There is no relation between the presence or absence of this dermal reactivity and the character of the vascular pathology.

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Plasma Protein, Erythrocyte Sedimentability and Serum Lability in Blood of Normal and Tuberculous Rabbits.

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Sedimentation of the corpuscles of heparinized blood was determined by noting the extent of fall in glass tubes with an inside diameter of 4 mm. and height of 100 mm. during an interval of 1 hour. The tubes were centrifuged to insure complete sedimentation and the sedimentation index computed as the ratio between the sedimentation observed in 1 hour and the possible maximum extent of sedimentation.

Precipitability of serum protein was determined by adding various amounts of aluminum sulphate, as contained in a unit volume of 1 cc. to 0.2 cc. of unheated blood serum in small tubes. Serum and reagent were mixed and set aside at room temperature for 1½ hours. A heavy flocculent precipitate that settled out, leaving a clear supernatant fluid, was recorded as a positive reaction.

Maximal, minimal and average values for these blood properties as observed in the arterial blood of 20 normal male rabbits, with similar values for total protein, fibrin, globulin and albumin as contained in the plasma are listed in Table I.