

4767

Gastro-Intestinal Port of Entry of *B. Tuberculosis* in Dogs.

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Arnold¹ reviewed the work done in this laboratory upon the permeability of the intestinal tract to bacteria as a result of certain environmental changes. This is a report of our attempt to utilize similar experimental procedures to determine the permeability of the intestinal tract of the dog for *B. tuberculosis*.

Young dogs (2 to 4 months old) were used for these experiments. Some animals were given doses of *B. tuberculosis* in milk and placed upon a general bread and milk diet for 4 weeks. Others were fed a dose of *B. tuberculosis* and killed between 1 and 2 hours after feeding. A third experiment consisted of injecting the *B. tuberculosis* directly into the lumen of the duodenum and examining certain tissues 30 minutes later. The mesenteric lymph gland was removed from all dogs immediately after killing them in the ether chamber. The gland was macerated by grinding in mortar with sand and 3% sodium hydroxide, neutralized with hydrochloric acid and injected into 2 guinea pigs.

Forty-five young dogs were fed 3 times, once daily for 3 days, 10 mgm. *B. tuberculosis* in 100 cc. milk. Fifteen animals were given plain milk (pH 6.7) 8 of these were in ordinary temperature rooms, 7 were in warm and humid rooms (90° F. and 90% relative humidity); the same experiment feeding lactic acid milk (pH 5.0) and feeding alkaline milk (pH 8.0). These animals were observed for 6 weeks. Six died during this time, all had *B. tuberculosis* in mesenteric lymph gland by guinea pig test. These 6 puppies were undernourished and in poor condition at the beginning of the experiment. Only 3 of the remaining 39 animals showed positive *B. tuberculosis* by guinea pig tests. There was no evidence of gross lesions in any of these 9 animals. There was no difference between hot and ordinary room environment or in the acid, alkaline or plain milk animals.

The next experiment consisted of giving 62 puppies, one feeding each of 100 mgm. of *B. tuberculosis* in various milks, and removing mesenteric lymph glands one hour after feeding. Plain milk, lactic

¹ Arnold, *J. Hyg.*, 1929, **xxix**, 82.

acid milk and alkaline milk was fed to 36 animals, 12 each, in ordinary temperature room. In the warm and humid room, 16 were fed plain milk, 8 each with lactic acid and alkaline milk. The mesenteric lymph glands for all 62 young dogs were negative by the guinea pig test.

Under ether anesthesia 50 cc. of saline containing 1 gm. desiccated ox bile, one fresh egg white and 100 mgm. *B. tuberculosis* was injected into the lumen of the duodenum of 7 dogs. 10 cc. of portal vein blood was removed 5, 10 and 15 minutes after intra-duodenal injection. Animals were killed 30 minutes after injection. The portal blood specimen and parts of liver showed an absence of *B. tuberculosis* by the guinea pig test.

4768

Antigenic Absorption Through Intact Vaginal Mucosa in Humans.

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The introduction of an antigen into the body by applying it upon some surface area has received considerable attention since Besredka's work upon this subject. We wish to report the results obtained so far upon the application of an antigenic substance upon the vaginal mucosa and the demonstrable antibody titer in the blood serum following the contact of the antigen with this body surface. The application of the antigenic substance upon the intestinal mucosa in the light of our previous observations is now being attempted.^{1, 2}

B. typhosus broth cultures were lysed by phage and passed through the Berkefeld filter. The vaginal mucosa was exposed with aid of a speculum and 1 cc. of the sterile *B. typhosus* proteins sprayed upon the wall of the vagina. Blood was obtained before and each week for 3 weeks after the one application of 1 cc. of the antigen.

Ninety-eight cases have been followed through the period of observation. Of these, 75 or 76.5% showed the presence of agglutinins after 3 weeks, 23 or 23.5% were negative. Table I shows

¹ Arnold and Finder, *PROC. SOC. EXP. BIOL. AND MED.*, 1928, xxv, 615.

² Arnold, *J. Hyg.*, 1929, xxix, 82.