

Second, the pouch of the follicle which is attached to the neck of the unerupted tooth is very susceptible to infection. Nevertheless, it is pointed out that in some cases pericoronitis may exist for years without causing acute symptoms. At a later time conditions may develop which favor the development of the organisms. Furthermore, a higher degree of virulence may arise and thus a latent infection may flare up into an acute one.

3961

Treatment of Rickets With Irradiated Ergosterol (Vigantol).

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The absence of any clinical report of the effect of irradiated ergosterol on human rickets in the American literature seemed to justify recording the results obtained in 9 cases of rickets treated with Vigantol. Both the German product and the first American product were used. The latter was prepared by the Winthrop Chemical Company. Hess¹ has already reported successful results in experimental rat rickets with ergosterol and in human rickets through the use of irradiated yeast.

The researches of Windaus, Hess, Pohl, Rosenheim,² and their co-workers established the fact that ergosterol is the provitamine which becomes Vitamine D after irradiation for $\frac{1}{2}$ to 12 hours. If irradiated longer, its power of being activated is gradually lost, being completely lost after 80 hours of exposure to ultraviolet rays. It is obtained from yeast, ergot, and mushrooms, and occurs as a contaminator of cholesterol from 1/20 to 1/50%. It is oxidized if exposed to air for a long time, but if kept in oil (as Vigantol) it retains its potency for at least 6 months.

Rosenheim, Gyorgy,³ Hottinger,⁴ and others have shown that irradiated ergosterol is 20,000 times as antiricketic as cod liver oil and that in dosage of 1/10000 mg. daily it prevents rickets in a rat on a ricketic diet, and that 1-5 mg. daily heals human rickets, osteomalacia, tetany, and rickets tarda and is also effective prophylactically in

¹ Hess, A. F., *J. Am. Med. Assn.*, July 30, 1927.

² Rosenheim, O., and Webster, T. A., *Biochem. J.*, 1927, **xxi**, 127; *Lancet*, Feb., 1927.

³ Gyorgy, P., *Klin. Woch.*, 1927, **xiii**, 580.

⁴ Hottinger, A., *Z. f. Kinderheil*, 1927, **xliii**, 8; 1927, **xliv**, 3.

premature infants. The reports in the German literature are numerous and complete. Recent work^{5, 6} here and abroad shows that the purified cholesterol still after irradiation has antiricketic properties if given in a dosage 30 times as great as originally used by Windaus and Hess. Vollmer⁷ has shown that a single large injection of Vigantol, *i. e.*, 1 mg. ergosterol in a ricketic rat will cure the disease, thus showing that the vitamine can be stored and acts over a longer time.

As an example of the type of cases which we treated, one history is given in detail:

E. N., male, Italian, 7 months old, full term, breast fed 2 months, never received cod liver oil or ultraviolet ray treatments, was admitted because of pneumonia. Extensive occipital craniotabes, large parietal bosses, anterior fontanelle of 5x5 cm., a large rosary, Harrisons groove, flaring of the ribs, a pot belly and a palpable spleen, bow legs, enlarged wrists and ankles were present. Blood serum calcium was 9.5 mg. % and phosphorus 2.0 mg. %. X-ray picture showed marked enlargement of wrists with irregularly fringed and cupped epi-diaphyseal junction, a wide metaphysis and generalized poverty of lime. On 3.3 mg. of ergosterol daily in the form of Vagintol administered with milk he showed evidence of healing of the craniotabes in 12 days. The X-ray picture in 18 days showed an increase in lime of the long bones plus the deposit of white line of calcification at the epiphyseal end of the metaphysis. In 6 weeks the entire metaphysis was impregnated with lime and 2 new centers of ossification of wrist bones made their appearance. The blood serum calcium and phosphorus after 14 days changed to 9.8 and 4.2 mg. % respectively. The pneumonia improved without complications. The results in the other 8 cases were similar.

This exemplifies the typical result obtained in all but one of our 9 cases, both colored and white children. One very extreme case showed progressive healing but not a complete cure, even after 8 weeks. All but one child received 3.3 mg. ergosterol in oil (Vigantol) along with one of their milk feedings.

Craniotabes: Fastest time of healing—author, 7 days.

Fastest time of healing—other authors, 6 days.

Average time of healing—author, 14-21 days.

Average time of healing—other authors, 14-21 dys.

X-ray evidence of healing: Author—earliest, 17 days.

Other authors—earliest, 10 days.

⁵ Bills, Honeywell and MacNair, *J. Biol. Chem.*, 1928, lxxxvi, 261.

⁶ Jendrossik, A., and Kemenyfi, A. G., *Biochem. Z.*, 1927, 189.

⁷ Vollmer, H., *Z. f. Kinderheil*, 1928.

Author—average, 21 days.

Other authors—average, 21 days.

Complete healing: Author—6 weeks plus.

Other authors—5 weeks plus.

Return of calcium and phosphorus to normal: Author—14-21 days; other authors—14-28 days.

It is hoped that our dairies will be requested either to radiate the milk or preferably to add irradiated ergosterol so that we may use this newer knowledge to advantage in attempting prophylactically to prevent the extensive occurrence of rickets.

3962

Effect of Glucose on Urea Decomposition by *B. Proteus*.

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A typical strain of *B. proteus vulgaris* was grown in sugar free beef infusion broth, 1.0% glucose infusion broth, 0.5% urea infusion broth, and 1.0% glucose, 0.5% urea infusion broth, respectively. Incubation was practiced at 37° C. for 1, 3 and 5 days, at which times the following determinations were made:

a—Titratable acidity or alkalinity expressed as cc. of normal acid or alkali per 100 cc. of media.

b—Hydrogen-ion concentration.

c—Quantitative ammonia expressed as mg. of ammonia nitrogen per 100 cc.

d—Quantitative sugar expressed in percentage.

Results—For simplicity only the maximum readings without respect to days of incubation are here reported.

The reaction of the plain broth became 1.8 cc. alkaline, pH 7.3 to 8.3 and the glucose broth 3.0 cc. acid, pH 7.2 to 5.3. The amount of ammonia produced in the glucose broth was 8.9 mg. as against 36 mg. in the same broth without sugar. The alkalinity of the plain urea broth increased 6.7 cc., pH 7.3 to 9.2, and the ammonia 179.3 mg. The reaction of the glucose urea broth changed 1.5 cc. alkaline, pH 7.2 to 8.0, in contrast to the acidity of the glucose broth but not nearly to the degree of alkalinity manifested by the plain urea broth. Nevertheless 40.1 mg. more ammonia was produced in the glucose urea broth than in the plain urea broth.