

Further observations on the toxicity of the oil of chenopodium.

By **WILLIAM SALANT** and **ROBERT BENGIS**.

[From the Pharmacological Laboratory, Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C.]

As pointed out in a previous communication from this laboratory, the vegetable oils may decrease the toxicity of the oil of chenopodium. Observations made since these results were published, have amply corroborated our previous findings. Four tenths to 0.6 c.c. per kilo of the oil of chenopodium given by mouth to rabbits was fatal in 22 per cent. to 25 per cent. of the experiments while the mortality when this amount was given in acacia reached 78 per cent. Observations were also made on the effect of chenopodium on the action of the kidney under different conditions of diet. Albumin and casts were found in the urine after the administration of 0.4 to 0.6 c.c. oil of chenopodium per kilo with 15 c.c. cocoanut oil to rabbits receiving an oats diet. A small amount of albuminuria and casts were also found, however, after feeding the same amounts of the vegetable oils. This usually lasted 24 to 48 hours, while albuminuria and casts after oil of chenopodium persisted much longer. When oil of chenopodium was given in acacia similar results were obtained indicating that the glycerides do not protect the kidney against the irritating effect of oil of chenopodium. On the other hand, in experiments on rabbits which received carrots the results indicated a very marked protective action. Four tenths to 0.6 c.c. oil of chenopodium per kilo fed to rabbits on such a diet usually failed to indicate the presence of renal irritation. Albumin and casts seldom appeared in the urine especially when a sufficient amount of carrots was consumed. The functional efficiency as tested by the elimination of phenolsulphophthalein did not show any evidence of impairment in rabbits and dogs. The permeability of the kidney is distinctly interfered with, however, in poisoning with oil of chenopodium. We found that fat soluble dyes may pass into the urine of normal rabbits. But when chenopodium is given at

the same time or several days later, the elimination of these dyes may be partly or entirely inhibited. In some experiments, permanent arrest of the passage of these substances was caused by the administration of chenopodium.

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An index of urea excretion.

By FRANKLIN C. McLEAN.

[From the Hospital of the Rockefeller Institute for Medical Research,
New York.]

Ambard and Weill have expressed the relationship between the concentration of urea in the blood and the rate of its excretion by means of a formula known as Ambard's coefficient,¹ the accuracy of which has been confirmed on a number of normal individuals by the author and Selling.² We now use the Ambard laws in a new formula, which expresses the ability of the kidney to excrete urea in percentage of the normal efficiency.

$$I \text{ (Index)} = \frac{8.96 D \sqrt{C}}{Wt \times Ur^2}.$$

I = index of urea excretion (100 = average normal, 80-150 maximum normal variation).

D = grams urea excreted per twenty-four hours.

C = grams urea per liter of urine.

Ur = grams urea per liter blood.

Wt = weight of individual in kilos.

The index measures directly one of the more important functions of the kidney and has yielded valuable data in the study of various conditions associated with impaired elimination. For the calculation a special slide rule has been devised, which enables one to make the necessary calculation without effort in a few seconds.

¹ Ambard, *Compt. rend. Soc. de biol.*, 1910, Dec. 3, p. 506.

² McLean and Selling, *Jour. Biol. Chem.*, 1914, XIX, 31.