

ring in the paludrine molecule does not seem to result in active compounds.

Simian Malaria Tests.—Some of the compounds reported above were also tested against blood induced infection of *Plasmodium knowlesi* in Rhesus monkeys at the Malaria Institute of India for assessing their preliminary suppressive activity.

m-Chloro analogue (No. 4) and *p*-bromo analogue (Type I; X = *p*-bromophenyl) of paludrine have shown encouraging suppressive activity. In the sulphabiguanide series, compound No. 7, 9, 11 and 17 have been found to be inactive while compound No. 16 as well as bromoanalogue of compound No. 7 (type II; X = Br) have shown encouraging suppressive activity. Compound No. 18 and 20 have also failed to show any noteworthy activity.

These results are generally in agreement to those obtained in the case of avian malaria screening tests.

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1. Bami, Iyer and Guha, *J. Indian Inst. Sci.*, 1947, **29A**, 15. cf. *Curr. Sci.*, 1947, **16**, 253. 2. —, *Ibid.*, 1948, **30A**, 1, cf. *Curr. Sci.*, 1948, **17**, 90. 3. —, *Ibid.*, 9, cf. *Nature*, 1948, **162**, 146. 4. Bami and Guha, *Ibid.*, 1949, 31A (in press), cf. *Curr. Sci.*, 1948, **17**, 272. 5. —, *Sci. and Culture* (in press). 6. Wiselegle, "A survey of antimalarial drugs, 1941-45," Vol. 1. 7. Card, Davey and Rose, *Am. Trop. Med. and Parasitol.*, 1945, **39**, 139. 8. Card and Rose, *Nature*, 1946, **158**, 707.

INFLUENCE OF HYDROXYCARBOXYLIC ACIDS ON THE REACTION BETWEEN α -NAPHTHYLAMINE AND DICHROMATE AND α -NAPHTHYLAMINE AND VANADATE

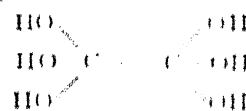
THE catalytic influence of the oxalate ion on the reaction between hydriodic acid and dichromate,¹ hydrobromic acid and dichromate,² aromatic amines and dichromate,³ hydriodic acid and vanadate,⁴ and aromatic

amines and vanadate⁵ has been previously reported.

van Eck⁶ has developed a colorimetric test for dichromate. According to him, addition of a trace of α -naphthylamine to a solution of potassium chromate and subsequent acidification with tartaric acid produces an intense blue coloration. He claims that the reaction can be used for the colorimetric estimation of dichromate.

Experiments now carried out have shown that the action of tartaric acid is mainly catalytic and not due to its hydroxy ion concentration, since no color was produced when sulphuric, hydrochloric and acetic acid were employed for acidifying the solution. Moreover, other hydroxycarboxylic acids like citric, lactic and malic acids were found to catalyze the color reaction. Oxalic acid, though a carboxylic acid, is found to be more active than even the hydroxyacids. Vanadate also produces a blue color with α -naphthylamine under similar conditions.

This peculiar property of oxalic acid can be satisfactorily explained by the theory of Bergel,⁷ who suggested that oxalic acid in its hydrated form can be represented as a polyhydroxy compound with the following structure:



Details will appear elsewhere.

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1. Viswanadhan, C. R., and Gopala Rao, G., *Curr. Sci.*, 1912, **11**, 102. 2. —, *Ibid.*, 1913, **12**, 186. 3. —, *Ibid.*, 1914, **13**, 47. 4. —, *Ibid.*, 1913, **12**, 229. 5. Narasimha Sastri, M., *Ibid.*, 1948, **17**, 327. 6. van Eck, P. K., *Chem. Weekblad.*, 1915, **12**, 68. 7. Bergel, E., *University of Leeds Magazine*, 1944.

A PRELIMINARY INVESTIGATION INTO THE VIABILITY OF IMMATURE EMBRYOS OF CORN UNDER CONDITIONS OF COLD STORAGE AT FREEZING POINT

IN any investigation involving embryo culture requiring the dissecting out of several hundreds of embryos from immature kernels of corn (maize) or other plants, any method that helps to preserve the young embryos from loss of viability should have a special significance in that such an operation could then be conducted through several days or longer, without being obliged to do it all at one moment. The present

investigation was conducted to see if cold storage at freezing point would help to preserve the viability of the immature embryos of corn and if so, for how long. A 3-week-old corn cob from an inbred stock, with husk intact, was placed in the refrigerator immediately after harvest on August 31, 1947. The embryos were dissected out of their kernels and daily tested for viability in Tukey's culture medium from the time the kernels were kept in the culture medium and continuing until the embryos showed no sign of viability. The kernels were plump at the time of keeping in the refrigerator. After five hours they had already shrunk at the bottom. A sort of dryage was evidently in progress. After a week they were distinctly shrunken. At the end of twelve days they had practically flattened out and the borderline of the embryo was clearly thrown out to view at the anterior surface of the kernel. At the end of sixteen days the seed coat had become as hard as that of a matured seed. Thereafter the dissecting out of the

embryo became difficult. Ten embryos were tested each time. They showed hundred per cent. viability till the sixteenth of October 1947. Thereafter there was a steady decline in the viability. None of the embryos kept on the 26th of October germinated, while only one out of ten excised on the 25th of October germinated. Hence the period of viability for a 3-week old embryo kept in cold storage at freezing point, appears to be approximately a month and a half. The period, however, may not be the same for older or younger embryos.

In the present investigation, however, the embryos were obtained from a single ear. To confirm the result, embryos should be tested from more than one ear and the test repeated.

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1. Tukey, H. B., *Proc. Am. Soc. Hort. Sci.*, 1934, **32**, 313.

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