

## A NOTE ON THE ALKALOID OF *CROTALARIA DAMARENSIS*.

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A sample of *Crotalaria damarensis* which was received from the Pietersburg district, Transvaal, for investigation for suspected stock-poisoning was found to produce no ill-effects on sheep when these animals were force-fed over long periods.

Subsequent chemical investigation revealed a high alkaloid content of the dry powdered plant in the flowering and seeding stages. Maceration with water followed by alkanization and steam distillation, yielded a hygroscopic alkaloid. The picrate with m.p. 215-217° C. and the chloroplatinate which melted at 162° C., were prepared. From the analysis of the former and the molecular weight derived from the latter, the alkaloid had the probable molecular formula:  $C_{12}H_{18}N_2O_2$ . This substance differed from the *Crotalaria* alkaloids, mono-crotaline, isolated from *Crotalaria spectabilis* by Neal *et al.*, (1935) and dicrotaline, isolated from *Crotalaria dura* and *Crotalaria globifera* by Marais (1944) in that it remained unchanged when refluxed with barium hydroxide.

### EXPERIMENTAL.

#### *Extraction of the Alkaloid.*

The dry powdered plant in the flowering and seedling stages was extracted with 96 per cent. alcohol. After removal of the alcohol, the extract was diluted with water, made strongly alkaline with sodium hydroxide, and the mixture steam-distilled. A colourless alkaloid distilled over. From this distillate the free alkaloid was prepared by extracting the alkalinified solution with chloroform. Evaporation of the chloroform yielded a colourless, hygroscopic product with an irritating smell. It could be crystallised only when stored over sulphuric acid in a vacuum exsiccator.

The hydrochloride of the alkaloid was prepared and proved to be as hygroscopic as the free base.

#### *Picrate.*

The picrate was obtained in needles which melted at 215-217° C. after repeated recrystallisation from 96 per cent. alcohol.

#### *Analysis.\**

- (a) 3·821 mg. : 6·750 mg. CO<sub>2</sub> : 1·540 mg. H<sub>2</sub>O
- (b) 4·065 mg. : 7·150 mg. CO<sub>2</sub> : 1·630 mg. H<sub>2</sub>O
- (c) 3·720 mg. : 6·490 mg. CO<sub>2</sub> : 1·420 mg. H<sub>2</sub>O
- (d) 3·865 mg. : 6·765 mg. CO<sub>2</sub> : 1·520 mg. H<sub>2</sub>O

\* Analysis by Drs. G. Weiler and F. B. Strauss, Oxford, England.

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- (a) 2.610 mg. : 0.362 ml. N<sub>2</sub> at 762 mm. and 23° C.  
(b) 3.660 mg. : 0.509 ml. N<sub>2</sub> at 763 mm. and 25° C.  
(c) 3.622 mg. : 0.494 ml. N<sub>2</sub> at 761 mm. and 24° C.  
(d) 3.445 mg. : 0.460 ml. N<sub>2</sub> at 761 mm. and 24° C.

Found (a) C=48.19, H=4.51, N=16.00%.

(b) C=47.99, H=4.48, N=16.00%.

(c) C=47.60, H=4.27, N=15.7%.

(d) C=47.75, H=4.40, N=15.4%.

Calculated for C<sub>18</sub>H<sub>21</sub>N<sub>5</sub>O<sub>9</sub>: C=47.92, H=4.69, N=15.51%

*Chloro-platinate.*

The platinate was prepared by addition of platinum-chloride to the acid solution of the hydrochloride of the base. On careful evaporation of the solution, the platinate crystallised with melting point 162° C.

*Molecular weight of the base.*

(a) 8.40 mg. platinate: 2.580 mg. Pt.

(b) 6.97 mg. platinate: 2.195 mg. Pt.

∴ Molecular weight (dibasic alkaloid): (a) 226.9  
(b) 211.1

Calculated for C<sub>12</sub>H<sub>18</sub>N<sub>2</sub>O<sub>2</sub>: 222.2

*Toxicity of the Alkaloid.*

Except for some salivation, no ill-effects were observed when rats weighing 250 gr. were dosed *per os* with 160 mgm. of the hydrochloride. Subcutaneous injection of 40 mg. of the hydrochloride caused marked necrosis at the site of injection, the rats remaining otherwise apparently normal.

REFERENCES.

- MARAIS, J. S. C. (1944). Dicrotaline. The toxic alkaloid from *Crotalaria dura* (Wood and Evans) and *Crotalaria globifera* (E. Mey). *Onderstepoort JI.* Vol. 20, No. 1, pp. 61-65.  
NEAL, W. M. *et al.* (1935). The isolation and some properties of an alkaloid from *Crotalaria spectabilis* Roth, *J. Am. Chem. Soc.*, Vol. 57, p. 2560.