

Note upon the Isolation of the Toxic Principle from a Species of *Dimorphotheca*, probably *Dimorphotheca fruticosa*.

By

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Origin: Heroncliff, Port Elizabeth.

A PLANT reported to have caused poisoning of stock in the Port Elizabeth district, was recently submitted to this Laboratory for examination. The material was in the flowering state. Specimens were sent to the Division of Plant Industry for botanical identification, but, unfortunately, no seeds were available. The Principal Botanist identified the plant as a species of *Dimorphotheca*, probably *Dimorphotheca fruticosa*.

This species has not previously been chemically examined, although the cyanogenetic glucoside linamarin has been isolated from *Dimorphotheca spectabilis* and *Dimorphotheca zeyheri* (Rimington, 1932), from *Dimorphotheca cuneata* (Marais and Rimington, 1934), and from *Dimorphotheca ecklonis* (Rosenthaler, 1922).

Tests showed the plant to be cyanogenetic and therefore hydrogen cyanide determinations were carried out and linamarin looked for, with the result that the toxic glucoside was isolated in a yield corresponding to 84 per cent. of that theoretically possible.

DETERMINATION OF HYDROGEN CYANIDE.

The technique employed was that previously described (Rimington, 1932), six hours' maceration being found sufficient for complete liberation of hydrogen cyanide in the case of ground, dried material

and about 18 hours for the fresh cut-up plant. The results obtained were as follows:—

Fresh plant.	Moisture content.	Mgm. HCN per 100 gm.	Gm. HCN per 100 gm. dry wt.
Leaves (wilted).....	83.27	243.0	1.45
Stems.....	73.24	82.8	0.31

Dried, powdered material contained 278 mgm. HCN. per 100 gm. There was thus considerable loss on drying.

ISOLATION OF THE CYANOGENETIC GLUCOSIDE.

The method employed was direct extraction in a Soxhlet apparatus with ethyl acetate. The extract was evaporated to dryness, taken up in water, filtered, again evaporated in presence of calcium carbonate and a little decolorising charcoal and the dry residue boiled up repeatedly with dry ethyl acetate. The glucoside separated in pure form on cooling this extract. In all, there was obtained 4.2071 gm. from 200 gm. of starting material, a yield equivalent to 84.2 per cent. of that theoretically possible.

It had all the properties of linamarin and a specimen did not depress the melting point of authentic linamarin isolated from *Dimorphotheca spectabilis*.

The following constants were recorded:—

$$\text{M.P. } 141^{\circ}. \quad \left[\begin{array}{l} \alpha \\ D \end{array} \right]_{21}^{\text{D}} = \frac{0.67 \times 15 \times 100}{2 \times 19.91} = 25.23^{\circ}$$

SUMMARY.

The cyanogenetic glucoside Linamarin has been isolated from a species of *Dimorphotheca*, probably *Dimorphotheca fruticosa*. The leaves of the plant contain approximately 1.5 gm. of HCN. per 100 gms.

REFERENCES.

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- ROSENTHALER, L. (1922). *Schwiz. Apoth. Zeit.*, Vol. 60, p. 234.