

Recent Investigations into the Toxicity of Known and Unknown Poisonous Plants in the Union of South Africa.

By DOUW G. STEYN, Section of Pharmacology and Toxicology,
Onderstepoort.

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COMPOSITAE.

Denekia capensis Thunb. (O.P.H. No. 8895; 23.7.34
N.H. No. 16485).

Common name: —

Origin: Syferkraal, P.O. Potgietersrust, Transvaal.

State and stage of development: Dry and in the late flowering
and seeding stage.

Sheep 38899 (*full mouth*, 29 Kg.) received 200 gm. of dry plant
daily, except Sundays, for a period of twenty-five days. Total amount
of dry plant drenched = 4,200 gm.

Sheep 34170 (*full mouth*, 31 Kg.) received 400 gm. of dry plant
daily, except Sundays, for a period of twenty-five days. Total
amount of dry plant drenched = 8,400 gm.

Result: Negative.

Geigeria aspera Harv. O.P.H. No. 12844; 16.10.34).

Common name: Vomiting-bush; vermeerbossie.

Origin: Skaapplaats, P.O. Wolvehoek, O.F.S.

State and stage of development: Fresh and in the pre-flowering
stage. (*N.B.*—New growths on plants of previous season.)

Sheep 38193 (*4 tooth*; 35 Kg.): 600 gm. of the fresh plant at
3.30 p.m. on 16.10.34.

17.10.34—9 a.m.—hoven, apathetic, accelerated pulse and
laboured respiration. Received another 600 gm. of fresh plant.
Vomiting occurred about three hours after administration of the
second dose. Temperature 104.8° F.

18.10.34—8 a.m.—animal found dead.

Post-mortem appearance.—Pronounced general cyanosis; rumen markedly distended with gas; hyperaemia of ruminal wall; acute catarrhal enteritis; pronounced hyperaemia of the lungs; haemorrhages in the mucosa of the thoracic portion of the trachea.

The plant was then dried in the shade and administered to a sheep to ascertain whether it had decreased in toxicity.

Sheep 38945 (4 tooth; 30 Kg.): 400 gm. dry plant on 20.11.34.

21.11.34—appears ill; laboured respiration; apathy; hoven. Received another 400 gm. dry plant.

22.11.34—do. Received another 400 gm. dry plant.

23.11.34—do. Lips stained with ruminal contents. Received another 400 gm. dry plant.

24.11.34—do. Temperature 104.8° F. Received another 400 gm. dry plant.

26.11.34—do., vomiting; temperature 104.6° F. Received 200 gm. dry plant.

17.11.34—do., vomiting. Drenching discontinued.

28.11.34—do.; improving; temperature 104° F.

29.11.34—improving; temperature 104° F.

30.11.34—improving; temperature 104.4° F.

1.12.34—improving; temperature 102.4° F.

2.12.34—apparently normal.

Forty grams of dry plant is equivalent to about 100 grams of fresh plant.

Two thousand six hundred gm. *dry plant* (equivalent to about 6,500 gm. fresh plant) only caused transitory symptoms of *vermeer-siekte* in sheep 38945, whilst 1,200 gm. fresh plant (equivalent to 480 gm. dry plant) caused death in sheep 38193.

It therefore appears that the fresh plant decreases in toxicity during the process of desiccation. The result of this experiment is however not conclusive proof that such is the case as owing to the fact that a limited amount of plant material was available only two sheep could be employed in the test.

Inula graveolens Desf. (O.P.H. No. 1792; 12.6.35).

Common names: Khaki bush, Khaki weed, stinkweed (Australia), kakiebos.

Origin: Stellenbosch, Cape Province.

State and stage of development: Dry and in seeding and post seeding stage.

The person from whom the plant was received stated that she had used it with great success in the treatment of a case of rheumatism after other recognised cures had failed to give relief.

In Australia it is used in the treatment of asthma and in Europe it is administered in colic, dysuria and amenorrhoea. A volatile oil with a greenish fluorescence has been isolated by Schimmel and Co. and probably contains *bornyl acetate*. According to Merck the plant apparently contains two active principles, which have a paralysing effect on the central nervous system (Watt and Breyer-Brandwyk, 1932).

Rabbit A (2.4 Kg.) received 10 gm. dry plant twice daily for seven days, that is a total of 140 gm. in the course of seven days.

Rabbit B (2.25 Kg.), ditto.

Sheep 43448 (35 Kg.) received 300 gm. dry plant daily on five consecutive days, that is a total of 1,500 gm. dry plant.

Result: Negative.

Pyrethrum extract.

The extract is obtained from the flowers of *Pyrethrum carneum*, *P. caucasicum*, *P. cinerifolium* and *P. roseum*.

In the course of experiments conducted with locust poisons the effects of *Pyrethrum* extracts upon locusts were investigated. Extracts of *Pyrethrum* flowers are very poisonous to cold-blooded animals but much less so to warm-blooded animals, owing to the fact that the *pyrethrines* are readily saponified and broken down in the system of the latter animals (Magens, 1932).

It is a well-known fact that the *pyrethrins* are not very toxic to stock. The "Pyrethrin extract" used in this experiment contained approximately 50 per cent. pure *pyrethrin* and for the remaining "essential oils" of the plant.

Sheep 40657 (2-tooth, 22 Kg.) received 50 c.c. of the extract per os at 9 a.m. on 5.9.34.

6.9.34—apparently healthy.

7.9.34—do.

8.9.34—do.

9.9.34—listless, laboured respiration and accelerated and strong pulse.

10.9.34—8 a.m.—very listless, staggering gait, marked ataxy and weakness in hind-legs, pronounced dyspnoea. Eventually the animal was unable to rise (general paralysis). It died at 9 a.m. with symptoms of asphyxia and with the head drawn backwards.

Post-mortem appearances (interim about 1 hour).—Blood very watery and stained the finger badly; oedema of the bronchial and mediastinal lymphglands; pronounced hyperaemia and oedema of the mucous membrane of the posterior portion of the ruminal and reticulum wall; acute catarrhal enteritis affecting the jejunum and ileum.

Senecio bupleuroides DC. (O.P.H. No. 11490; 26.9.34;
N.H. No. 16642).

Common name: Ragwort.

Origin: Allerton Laboratory, Pietermaritzburg, Natal.

State and stage of development: Wilted and in the flowering stage.

Sheep 34170 (*full mouth*, 42 Kg.) received 1,200 gm. of the dry plant on three consecutive days (equivalent to about 3,500 gm. of fresh plant).

Result: The animal developed no symptoms of poisoning except transient fever.

Senecio (nearest *Senecio Burchellii* D.C.) (O.P.H. No. 15603;
23.11.34).

Common name: Ragwort.

Origin: Boksburg, Transvaal.

State and stage of development: Fresh and in the flowering stage.

Sheep 38899 (*4 tooth*; 31 Kg.) received 2,000 gm. of the fresh plant and 1,000 gm. of the dry plant in the course of ten days.

Result: Negative.

GRAMINEAE.

Sorghum saccharatum Pers (O.P.H. No. 524; 15.4.35).

Common name: Sweet sorghum, black amber cane, soetriet.

Origin: Newcastle, Natal.

State and stage of development: Fresh and in the late seeding stage.

The fresh leaves were found to contain approximately 0.15 per cent. hydrocyanic acid.

Acacia giraffae Willd. (O.P.H. No. 1230; 8.5.35).

Common names: Transvaal camelthorn, Transvaalse kameeldoring.

Origin: Colorado Ranch, Rustenburg, Transvaal.

State and stage of development: Dry mature pods.

The Manager of the Colorado Ranch informed the writer that severe losses amongst cattle had occurred in a camp where camelthorn trees are growing abundantly. These trees had never borne and shed so many pods in previous years as during this season. Another fact that should be mentioned is that at the time the losses occurred grazing was very poor in the camp concerned.

The Manager stated that the animals were usually found dead, no symptoms having been noticed prior to death. Autopsy revealed no characteristic lesions, the only striking feature being that in all cases the rumen contained large numbers of partly masticated camel-thorn pods. Unfortunately no specimens of ruminal contents were submitted for analysis.

The pods were found to contain approximately 0.08 per cent. hydrocyanic acid.

For further information concerning the toxicity of this tree see Steyn and Rimington, 1935.

Acacia saligna Wendl. (O.P.II. No. 750; 25.4.35).

Common names: Port Jackson willow, golden willow.

Origin: Baakens River Native Reserve, Port Elizabeth.

State and stage of development: Fresh young shoots with no flowers or fruits.

Sheep 42538 (4 tooth; 32 Kg.) received 1,200 gm. of fresh leaves on two consecutive days.

Result: Negative.

Hydrocyanic acid test.

- (1) Fresh leaves alone: negative.
- (2) Fresh leaves alone + chloroform: negative.
- (3) Fresh leaves alone + emulsion: negative.

These results were confirmed by tests conducted by Dr. C. Rimington.

Cassia absus L. (O.P.H. No. 2790; 11.5.34; N.H. No. 16430).

Common name:

Origin: Potgietersrust District, Transvaal.

State and stage of development: Dry and in the flowering and seeding stage.

Sheep 38885 (6 tooth; 25 Kg.) received 1,000 gm. of the entire dry plant in the course of five days.

Result: Negative.

Crotalaria Burkeana Benth. (O.P.H. No. 5774; 30.5.34).

Common name: Stiff-sickness bush; stywesiektebos.

Origin: Matilaskraal, P.O. Rustfontein School, Pietersburg District.

State and stage of development: Dry and in the late seeding stage.

The stems, leaves and pods were ground and drenched to sheep.

Sheep 38945 (6-tooth; 28 Kg.) received 100 gm. dry plant on 6.7.34.

7.7.34—appears healthy. 100 gm. dry plant.

8.7.34—do. Not drenched.

9.7.34—slight painfulness in front hoofs. 100 gm. dry plant.

10.7.34—slight painfulness in front hoofs. 100 gm. dry plant.

11.7.34—slight painfulness in front hoofs. 100 gm. dry plant.

12.7.34—appears normal again. 100 gm. dry plant.

13.7.34—drenching discontinued.

Sheep 38193 (6-tooth; 29 Kg.) received 400 gm. dry plant on 6.7.34.

7.7.34—8 a.m.—peculiar gait as if all feet are painful. The hind-legs are placed well under the body and back arched. All hoofs, especially those of the hind-legs, painful and warm; temperature 103.8° F. Another 400 gm. of dry plant; temperature 103.8° F.

8.7.34—condition slightly better; not drenched.

9.7.34—do.; 400 gm. dry plant.

10.7.34—condition almost normal; 400 gm. dry plant.

11.7.34—do.; 400 gm. dry plant.

12.7.34—apparently healthy; 400 gm. dry plant.

13.7.34—do.; drenching discontinued.

Result: *Sheep* 38193 definitely exhibited symptoms of an acute laminitis, which surprisingly passed off in spite of continued drenching of the animal. The animals were kept under observation for four months, but no elongation of the hoof was noticed.

As soon as fresh plant material is available this experiment will be continued.

Lotononis calycina var. *hirsutissima* Düm. (O.P.H. No. 464;
13.4.35: Cryptogamic Herb No. 3459).

Common name:———.

Origin: Tarlton Station, Krugersdorp District (Collected by Mr. L. C. C. Liebenberg of the Division of Plant Industry).

State and stage of development: Dry and in the flowering and seeding stage. The plant is affected by fungi.

Hydrocyanic acid test.

(1) 1 gm. of entire plant—negative.

(2) 1 gm. of entire plant+chloroform—negative.

(3) 1 gm. of entire plant+emulsion—negative.

LILIACEAE.

Dipcadi glaucum Bkr. (O.P.H. No. 22784; 28.3.35).

Common name: Wild onion, wilde-ui, malkop-ui.

Origin: "Rusgenoeg", Louis Trichardt District.

State and stage of development: Fresh bulbs in the post seeding stage.

Fresh leaves.

Rabbit A (1.85 Kg.): 10 gm. at 11 a.m., 28.3.35.

Rabbit B (1.9 Kg.): 30 gm. at 11 a.m., 28.3.35.

29.3.35—appears healthy. 15 gm. fresh leaves.

Result: Negative.

Fresh bulbs.

Rabbit A (2.2 Kg.): 10 gm. at 11.15 a.m., 28.3.35.

Result: Negative.

Rabbit B (2.35 Kg.): 30 gm. at 11.15 a.m., 28.3.35.

29.3.35—appears healthy. 35 gm. fresh bulbs.

30.3.35—diarrhoea, not feeding.

31.3.35—diarrhoea, improving.

1.4.35—apparently healthy.

2.4.35—apparently healthy.

On a number of previous occasions the plant has been proved toxic to sheep and rabbits. The decreased toxicity of the above specimen is probably due to its being tested in the post seeding stage.

Material (O.P.H. No. 15130; 12.11.34) of this plant in the flowering stage collected on the Research Station, P.O. Mara, Louis Trichardt District, was drenched to a sheep.

Sheep 40623 (6-tooth; 31 Kg.): 800 gm. of the fresh bulbs, leaves and flowers at 4 p.m. on 12.11.34.

13.11.34—not feeding well, listless, another 800 gm.

14.11.34—7.30 a.m.—standing in a corner of the pen pressing hard against the fence; temperature 106.4° F.; profuse diarrhoea (faeces yellow and watery); very apathetic; not feeding; groaning; dyspnoea; accelerated and strong pulse (12.6 p.m.)

15.11.34—7.30 a.m.—Died previous night.

Post-mortem appearances.—Interim approximately five hours. Rumen markedly distended with gas; intense general cyanosis; acute catarrhal abomaso-enteritis.

Ornithogalum Pretoriense Bkr. (O.P.H. No. 18715; 8.1.35).

Common names:———.

Origin: Queenstown District, Cape Province.

State and stage of development: Fresh and in the flowering stage.

Rabbit (2.1 Kg.): 50 gm. of the fresh bulb and leaves per os on 8.1.35.

Result: Negative.

Scilla (= Mogg 5630 named *Scilla ovalifolia* Bkr) O.P.H.

No. 12506 A; 5.10.34; N.H. No. 16646).

Common names: ———.

Origin: " Rietpoort ", P.O. Sandspruit, Eastern Transvaal.

State and stage of development: Fresh and in the flowering stage.

Rabbit A (1.8 Kg.): 10 gm. fresh bulbs, leaves and flowers on 5.10.35.

6.10.35—apparently healthy; 10 gm.

Rabbit B (2 Kg.): 20 gm. fresh bulbs, leaves and flowers on 5.10.35.

6.10.35—apparently healthy; 20 gm.

Result: Negative.

Tulbaghia acutilobia ex descrip. (O.P.H. No. 12506 B; 5.10.34.

N.H. 16647).

Common name:———.

Origin: " Rietpoort ", P.O. Sandspruit, Eastern Transvaal.

State and stage of development: Fresh bulbs in the seeding stage.

Rabbit A (1.8 Kg.): 10 gm. fresh bulbs on 5.10.34.

6.10.34—apparently healthy; another 10 gm.

7.10.34—do.

8.10.34—do.

9.10.34—do.

Rabbit B (2 Kg.): 20 gm. fresh bulbs on 5.10.34.

6.10.34—apparently healthy; another 20 gm.

7.10.34 to 10.10.34—apparently healthy.

Result: Negative.

Urginea altissima Bkr. (O.P.H. No. 15708; 23.11.34.)

Common name: Maerman.

Origin: "Bierkraal", Rustenburg District.

State and stage of development: Fresh bulbs with flowers (flower-stalks 3-4 feet long).

Rabbit A (1.8 Kg.): 10 gm. juice expressed from fresh bulbs on 23.11.34.

.....*Result*: Negative.

Rabbit B (2.0 Kg.): 60 gm. juice expressed from fresh bulbs on 23.11.34.

23.11.34—not feeding.

24.11.34—not feeding.

25.11.34—apparently healthy.

Rabbit C (2.1 Kg.): 120 gm. juice expressed from fresh bulbs on 23.11.34.

24.11.34—7.30 a.m.—found paralysed in cage; respirations slow and deep; heart-beat 30 p.m. irregular and weak.

25.11.34—8 a.m.—still paralysed; killed *in extremis*.

Post-mortem appearance.—Hyperaemia of the lungs; dilatation of both heart ventricles; hyperaemia of the kidneys; pronounced hyperaemia of the mucosa of the stomach and small intestine.

OXALIDACEAE.

Oxalis Smithii Sond. (O.P.H. No. 1897; 11.6.35).

Common names:———.

Origin: Port Elizabeth.

State and stage of development: Fresh bulbs with no flowers or seed.

Rabbit A (2.8 Kg.): 20 gm. fresh bulbs daily for three days.

Rabbit B (2.3 Kg.): 20 gm. fresh bulbs daily for three days.

Result: Negative.

SANTALACEAE.

Thesium triflorum Thb. (O.P.H. No. 8637; 16.7.34:

N.H. No. 16478).

Common name: Gifbossie.

Origin: "Springfield", P.O. Tafelberg, Cape Province.

State and stage of development: Dry plant in seeding stage.

Rabbit A (2.1 Kg.): 10 gm. of dry plant daily for four days.

Rabbit B (2.2 Kg.): 20 gm. of dry plant daily for four days.

Result: Negative.

VITACEAE.

Cissus Juttae.

Common names: Wild grape, wilde druiwe.

Origin: "Auros", P.O. Otavi, South West Africa.

State and stage of development: Dry leaves submitted. Specific name of plant was sent by the person who submitted it.

Sheep 38945 (*full mouth*; 31 Kg.) received 3,200 gm. of the dry leaves in the course of nine days.

Result: Negative.

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