

## **Note on tincture of strophanthus / by Thomas R. Fraser.**

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## NOTE ON TINCTURE OF STROPHANTHUS.

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SINCE my communication, at the Cardiff meeting of the British Medical Association, on the Therapeutic Uses of Strophanthus (BRITISH MEDICAL JOURNAL, November 14th, 1885), I have been favoured with many letters from medical practitioners describing their experience of its effects. The general character of this experience has been confirmatory of the statements I had made. The therapeutic employment of strophanthus seems to be extending even more rapidly than was anticipated. Until now, this extension has been impeded by the difficulty in procuring the substance, but large supplies have recently been imported into the country by several drug merchants, and especially by two gentlemen associated with East Africa in their commercial pursuits—Mr. Buchanan, of Blantyre, and Mr. John W. Moir, of the African Lakes Company. The ample supply of strophanthus now available will no doubt lead to a further extension of its therapeutic employment in this country, and probably also in America and in the continental countries of Europe, where hitherto it has been tested to a very limited extent by a few physicians.

It has, therefore, become of importance to consider the pharmaceutical form of preparation that should be adopted, so as if possible to obtain a preparation of uniform strength and convenient dose. Were these conditions to be obtained, the preparation would generally be adopted for therapeutic purposes, and errors and risks from variations in strength and dosage would be avoided.

In the communication referred to, I described several cases of cardiac disease treated with strophanthus in the form of tincture, in which, however, several tinctures varying in strength and in other characters had been administered. These variations were to some extent due to the circumstance that, in the absence of knowledge regarding the therapeutic effects of strophanthus, trials of a tentative description were required with preparations of different strengths before one could be selected whose dose is a convenient one. More recently, I have nearly always employed a tincture corresponding to the officinal tincture of digitalis (1 in 8), as it was more easy with it to institute a comparison between strophanthus and digitalis. The dose of this tincture was ascertained to be from two to four minims, two minims being, in a large proportion of cases, a sufficient quantity. The preparation has in my hands proved altogether satisfactory, but no doubt for general use its dose may be an inconveniently small one.

Judging from expressions of opinion in various quarters, the requirements of general practice would in all probability be satisfactorily met by a tincture whose doses range from five to ten minims. These doses would be obtained by a tincture of 1 in 20, prepared by the following process; and I would accordingly propose the adoption of this tinc-



ture in the future applications of *strophanthus* in the treatment of disease.

*Strophanthus* seeds, deprived of their comose appendices, reduced to powder, and dried, 1 ounce or 1 part. Ether, freed from spirit and from water, 10 fluid ounces, or 10 fluid parts. Rectified spirit, a sufficiency to obtain 1 pint, or 20 fluid parts.

Remove entirely the stalks and comose appendices from the seeds, reduce the seeds to a moderately fine powder, dry the powder by exposing for twelve hours to a temperature of 100° or 120° Fahr., and weigh. Pack in a percolator (the percolator being furnished with air valves, or being otherwise so constructed that the percolation may be arrested when desired), add ether until the whole of the powder is saturated, and a small quantity of the ether has dropped into the percolator; arrest the percolation for twenty-four hours, and then continue percolating slowly until the whole of the ether has been used. If the last ether percolate should not be almost colourless, use more ether.

Remove the powder from the percolator; expose to the air, and break up any lumps after the ether has sufficiently evaporated; and continue the exposure, heating the powder, if necessary, to 100° or 120° Fahr., until all the ether has evaporated, when a uniform, nearly white, dry powder may easily be obtained.

Repack the powder in the percolator, add enough of rectified spirit to moisten it thoroughly; arrest the further flow of the spirit, and macerate for forty-eight hours; and pass rectified spirit slowly through until twenty fluid parts of tincture have been obtained.

In this process, the preliminary extraction with ether is for the purpose of removing the large quantity of inert oil contained in the seeds, which, if present in the tincture, would cause it to become opalescent on the addition of water.

The dose of this tincture is from five to ten minims. It may also be used in doses of half a minim to two minims, frequently repeated. It is nearly colourless, having a very pale yellow tinge; neutral in reaction, and intensely and rather persistently bitter in taste. It mixes unchanged with water, is not precipitated by solution of tannin, but becomes markedly opalescent when ether is added to it. Solution of perchloride of iron intensifies its yellow colour, and, at the same time, produces a slight haziness in the solution; and, after some hours, the slightly opalescent fluid acquires a greenish yellow colour.

The chemical and pharmacological experiments which I have made show that the seeds contain a much larger quantity of active principle than any other part of the plant. The pericarp of the follicles, and the comose appendices of the seeds, contain a relatively small quantity, and the quantity is not the same in each part of the pericarp. Details of observations on these points, as well as on the histology, chemistry, pharmacology and therapeutics of *strophanthus* are now nearly ready for publication; but, in the meantime, I must express the opinion that the seeds furnish the most convenient and trustworthy preparations for therapeutic administration, and that they alone should be used for preparing the tincture.





