A METHOD FOR THE ASSAY OF INDIVIDUAL ERGOT SCLEROTIUM

In previous communications on the subject,[1,2] one of the authors (B.M.) had stressed the need of ergot cultivation in India and recorded observations on the quality of Indian-grown ergot. Since then, satisfactory progress has been achieved in the production of medicinal ergot and further attempts are under way towards improving the strain of the fungus to yield higher alkaloidal contents.

In such efforts, as well as in the study of the medicinal value of various strains of ergot reported growing in Indian grasses,[3] one of the major handicaps has been the absence of a suitable micro-method for determining the alkaloidal contents of a few small ergot sclerotia. The B.P. method of colorimetric assay requires 12 gm. of ergot powder, a quantity hardly ever available for such experimental studies.

Bekesy[4] has described a method of analysing the alkaloidal content of individual ergot sclerotia but this reference could not be secured in India. An attempt was, therefore, made to devise a modified method based on the B.P. procedure using as small a quantity of ergot powder as is possible consistent with accuracy of determination. The following method appears to work well in our hands, though the results are only roughly quantitative. Fairbairn[5] has employed more or less a similar method for qualitative assay of ergot.

> "Shake vigorously 0·1 gm. (0·05 gm. is also sufficient) of powdered ergot (usually obtained from 1 or 2 big ergot sclerotium) with 5 c.c. of a 5 per cent. sol. of Na_2CO_3 for a few seconds. Add 10 c.c. $CHCl_3$ and shake; filter through a plug of cotton wool to break the emulsion formed. Wash the clear $CHCl_3$ sol. with a little H_2O. Transfer 6 c.c. of this $CHCl_3$ to a test tube and add 3 c.c. of the following reagent (*p*-dimethylaminobenzaldehyde—0·1 gm.; H_2SO_4 35 per cent. v/v)—100·0 mils.; Sol. of $FeCl_3$ (5 per cent.)—1·5 mils.
>
> The colour developed can be matched against a known strength of ergotoxine ethanesulphonate using the same reagent. The accuracy of the measurement is increased by using a Pulfrich photometer, in the same way as in the case of estimation of B.P. ergot."

Using this method, several readings have been taken with individual sclerotium from one batch of Indian ergot received from Coimbatore through the courtesy of the Government Mycologist, Madras. Figures (duplicate) were found to vary within wide limits, *e.g.*, 0·183 mg., 0·143 mg., 0·160 mg., 0·190 mg., etc., indicating that all sclerotia did not develop the active alkaloids to the same extent. The average figure for the batch came up to about 0·165 mg. by this method. By following the B.P. method, a figure of 0·145 mg. was obtained. This shows that the method of assay with small quantities of ergot is only a roughly quantitative method but nonetheless a dependable and workable one.

So far the alkaloidal content of ergots obtained from two grasses (*Chrosologon zeylanicus* and *Oplisimems compositus*) growing in South Indian hills (forwarded by the Government Mycologist, Madras) have been tested by the above method. The first gave a faint trace of ergot alkaloids, while the second gave negative results. Padwick and Agmatullah[6] have described two ergots found in the Simla Hills. One of them is on *Oplisimems compositus* but is reported to be different from *C. purpurea* and is named by them as *C. viridis*. This may be one explanation of the low alkaloidal content of ergots growing on grass hosts, as *C. purpurea* has long been known as the fungus which develops the medicinally important alkaloids in the ovary of the rye.

Biochemical Standardisation Laboratory, Govt. of India, Calcutta,
May 5, 1944.

B. Mukerji.
N. K. De.

1. Mukerji and Bose, *Sci. and Cult.*, 1942, **8**, 267. 2. — and De, *Curr. Sci.*, 1943, **12**, 87. 3. Pushkar Nath and Padwick, *Ibid.*, 1941, **10**, 488. 4. Bekesy, *Biochem. Zeitung.*, 1939, **302**, 187. 5. Fairbairn, *Pharm. Jour.*, March 13, 1943. 6. Padwick and Agmatullah, *Curr. Sci.*, 1943, **12**, 257.

EXTRACTUM PITUITARII LIQUIDUM FROM INDIAN CATTLE GLANDS

Considerable interests are now being focussed on the production of medicaments from glands available in India. One of the most essential drugs in this group is the posterior pituitary extract. It is an aqueous extract of the posterior lobes of pituitary bodies of oxen or other mammals and contains 10 International Units per c.c. According to B.P., Addendum 1936, the product should retain its potency for at least eighteen months after the date of manufacture. Recently Dey, Krishnan and Giriraj[1] have recorded the weight of pituitary glands as obtained in Madras, and have also prepared[2] dried posterior pituitary powder from the whole glands. In this laboratory the above powder is being systematically prepared for the last decade from cattle glands as collected from the Calcutta Corporation Slaughter House. In the table the weights of the whole pituitaries, fresh and desiccated posterior lobes, are being recorded along with those as found from American animals. The average potency of desiccated posterior pituitary powder as imported from abroad, has been found in our hands to vary from 82-90 per cent. in comparison with the International standard powder. The powder that is prepared in our own laboratory exerts on average a potency of 85 per cent. This on extraction with 0·25 per cent. acetic acid and on subsequent treatment affords the extractum Pituitarii

Type	Whole Pituitary		Weight of Posterior portion gm.	Desiccated powder	
	Number	Weight gm.		Weight gm.	Potency %
Foreign	100	225	25	4	82-90
Local	100	150	20	2·8	85

Liquidum. Each c.c. of this extract contains 10 International Units and maintains its potency for about three years.

From the above table it would be evident that though the potency of the dry posterior pituitary powder as obtained from the local glands is not at variance with that of the imported powder, the yield of the desiccated powder itself is about 30 per cent. less. Every precaution is taken in collecting, trimming, and drying the glands. In this connection references may be made to a previous observation by Basu, Bose and Das Gupta[3] on the lower yield of cholates from Indian ox bile. The question arises whether the active principles of the various glandular products from Indian animals can be further increased and/or improved by altering the breed and directing more attention to the nutrition as well as mode of slaughter of our domestic animals.

It has been noted by Dey *et al.*[2] that the annual requirements in India of posterior pituitary extracts correspond to about 2,500 gms. of the dried posterior powder. No mention has, however, been made of its standard and quality. Taking this to be of International standard the theoretical amount of units that might be obtained from the above powder, would be 5 million units.

Bengal Immunity Research Laboratory, Calcutta.
March 22, 1944.

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A. N. Bose.
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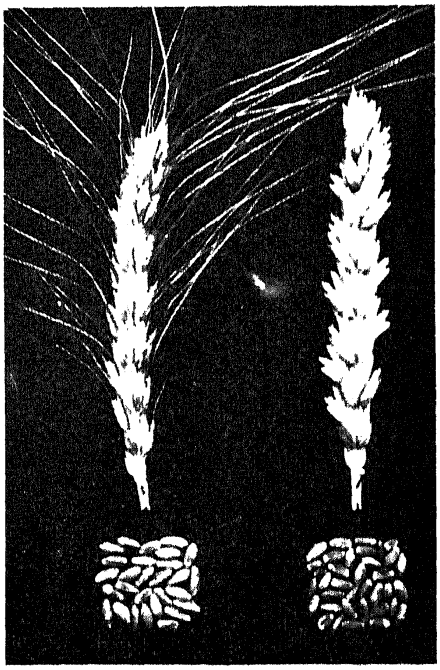
1. *Curr. Sci.*, 1944, **13**, 35. 2. *Jour. Sci. Ind. Research*, 1944, **2**, 87. 3. *Indian Med. Gazette*, 1940, **75**, 215.

A NEW QUALITY WHEAT FOR BOMBAY

The annual wheat acreage in Bombay Province covers an area of nearly 16 lacs of acres. The bulk of the area is under dry wheat and is concentrated in the north-central Deccan, north Gujarat and eastern Karnatak. Almost all of the main tracts have now suitable improved strains of dry wheats. The irrigated wheat area in the Province, however, varies from 1,50,000 to 2,00,000 acres annually, and although the area is comparatively small, it is scattered throughout the Province. The varieties of wheat under irrigation are Khapli (*T. dioccocum*), Baxi (*T. durum*) and Mondhya (*T. vulgare*), the latter being once the most extensively grown wheat. During the last twenty to twenty-five years, however, Pusa wheats have replaced the local irrigated wheats, especially the Mondhya variety. Of the various Pusa wheats, Pusa-4 (now I.P. 4) has spread very extensively, due mainly to its shorter period of maturity than local varieties, which helps it usually to escape steam-rust of wheat as well as saves the farmer an irrigation or two.

Although Pusa-4 has spread widely it has certain drawbacks. It shatters its grain rather easily if not harvested just in time. It does not tiller well and due to fewer leaves per plant the straw is coarse. Farmers, therefore, complain of its poor quality of *bhusa*. Moreover, Pusa-4 is an awnless wheat which affords it little protection against the attack by birds.

In the year 1932-33 Pusa-4 was crossed with a synthetic durum, Bansipli-809, with a view to combine the good characters of the two species. Bansipli-809 is itself a derivative from the cross of a synthetic Khapli, K. K. 568, and an improved durum strain, Motia (Bansi-168).



Niphad-4 Pusa-4

Bansipli-809 has black awns like Kala-Khapli-568, but unlike either Kala-Khapli or Motia varieties, it is an earlier maturing type. From

Table I

Milling and baking quality behaviour of Niphad-4 and its parents, Pusa-4 and Bansipli-809

Name of wheat	100 grain wt. gm.	Mottled grain %	Protein %	Feeds %	Straight run flour %	Loaf volume c.c.	Loaf type	Grain No.	Quality score %
N-4 (1942)	4·67	1·8	13·52	20·7	75·8	680	FII	6	85·0
N-4 (1943)	5·01	1·2	13·30	22·0	75·2	620	F	4	78·0
P-4 (1943)	4·38	7·4	13·40	23·6	73·0	510	FJ	3-4	65·0
Bansipli-809 (1943) ..	4·90	0·0	14·10	24·0	71·8	345	JK	3 Under-developed	36·5