

## A NOTE ON CORIANDER OF COMMERCE

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As a result of the examination of a number of samples of coriander it has been shown that it is possible to divide the commercial varieties into at least three groups and to give some indication of the geographical origin of the samples.

THE variation in the price of samples of coriander and in the quality and quantity of the oil distilled from them, has led to enquiries for a simple means of distinguishing between the commercial varieties. These varieties are usually named according to their geographical source.

Botanically, de Candolle<sup>1</sup> in 1830 distinguished two varieties. He gives the source as *Coriandrum sativum* Linn., and in a note adds the variety *microcarpum*, described as having fruits smaller by about one half. Alefeld named the first of these *Coriandrum sativum* L. var. *vulgare*. That the difference is recognised commercially is noted by Berger<sup>2</sup> and Heeger<sup>3</sup> who write that the fruit of *Coriandrum sativum* L. var. *vulgare* Alef. has a diameter of 3 to 5 mm. and that of *Coriandrum sativum* L. var. *microcarpum* has a diameter of 1.5 to 3 mm. The former would include Moroccan or Mogadore coriander and the latter Russian coriander. Two Polish specimens of the larger size which had been grown in the Pharmacognosy Gardens at Warsaw and Krakow respectively were labelled as being *Coriandrum sativum* L. var. *macrocarpum*.

Varentzov<sup>4</sup> found that, in general, the smaller fruits contained more essential oil than did the larger ones. Guenther<sup>5</sup> gives figures which support this, for example, Moroccan 0.2 to 0.3 per cent and Russian 0.8 to 1.0 per cent of oil.

Althausen and others<sup>6</sup> established standards such as ultra-violet adsorption spectra of the oil and emission spectra of the fruit ash, by which it is possible to "approximate or define the geographical origin of a sample of coriander fruit subject to inspection." The methods when applied to whole fruit are lengthy and it was decided to see if a sample method of distinction could be devised.

Diameters of these small spherical fruits are difficult to measure and there is some overlap of the diameters of the different varieties. Since the volumes of spheres of different diameter vary much more widely than do their diameters, and the mass of a sphere is proportional to its volume, the weight of a number of fruits (say 100), might prove a useful and easily applied means of differentiation of the varieties. The average mass (or weight) of 100 fruits of each available variety was therefore determined. By expressing the results as the number of fruits per gram, whole numbers are obtained and these give the most suitable means of comparison.

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## EXPERIMENTAL AND RESULTS

*Materials.* Recent samples of fruit were obtained through the kindness of Mr. G. R. A. Short, Dr. T. E. Wallis and Mr. E. J. Shellard. Museum specimens were also examined from the Museum of the Pharmaceutical Society of Great Britain and from the Museum of the Chelsea School of Pharmacy.

*Method.* Wherever possible, 10 batches of 100 fruits were counted from each sample and each batch was then weighed. Table I summarises the results obtained, both in terms of the minimum, average and maximum weights of 100 fruits and also of the minimum, average and maximum number of fruits per gram.

TABLE I  
WEIGHT OF 100 FRUITS AND THE NUMBER OF FRUITS PER GRAM OF 17 SAMPLES OF DIFFERENT VARIETIES OF CORIANDER

Variety	Source	Weight of 100 fruits g.	Number of fruits per per gram
1. Moroccan	* Wholesaler 1959	1.6234-1.7506-1.8675	54- 57- 62
2. Moroccan	† Drug Broker No. 1, 1959	1.3907-1.4714-1.6195	62- 68- 72
3. Mogadore	Chelsea Museum c. 1930	1.4528-1.4889-1.5859	60- 67- 69
4. Mogadore	† P.S.G.B. Museum Box c. 1900	1.2210-1.3636-1.4616	69- 73- 82
5. German (?)	† P.S.G.B. Museum 1909	1.3482-1.4313-1.5234	66- 72- 74
6. English	† Drug Broker No. 1, 1959	1.1372-1.1613-1.2496	80- 86- 88
7. Polish	‡ Macrocarpum from Warsaw 1953	1.1003-1.1260-1.1894	84- 89- 91
8. English	† P.S.G.B. Museum Jar	0.9464-1.0025-1.0554	95-100-106
9. English	† P.S.G.B. Museum Box	0.9184-0.9747-1.0176	98-102-108
10. Roumanian	† Drug Broker No. 1, 1959	0.8974-0.9422-0.9902	101-106-111
11. Polish	‡ Macrocarpum from Krakow 1958	0.9154-0.9354-0.9716	103-107-109
12. German	* Drug Broker No. 2, 1959	0.6540-0.7042-0.7688	130-142-153
13. Hungarian	* Wholesaler 1959	0.6314-0.6702-0.7010	143-149-158
14. Russian	Chelsea Museum 1942	0.5894-0.6208-0.6712	149-161-170
15. Russian	† P.S.G.B. Museum Jar 1933	0.5930-0.6098-0.6396	156-164-169
16. Russian	† P.S.G.B. Museum Box c. 1900	0.5310-0.5702-0.6080	166-175-188
17. Polish	‡ Microcarpum from Krakow 1958	0.5218-0.5481-0.5704	175-182-191

\* through Mr. G. R. A. Short

† through Dr. T. E. Wallis

‡ through Mr. E. J. Shellard

## DISCUSSION

The figures in Table I show that there is a clear division between samples 11 and 12. It seems reasonable to assume that samples 1 to 11 are derived from *Coriandrum sativum* L. var. *vulgare* Alef. and that samples 12 to 17 are derived from *Coriandrum sativum* L. var. *microcarpum* D.C. A smaller break occurs between samples 5 and 6 which suggests putting the samples into three groups. The fruits of samples 1 to 5 were found to have purple patches on the surface, a feature which was absent from samples 6 to 11. The purple patches appear to be confined to Moroccan or Mogadore varieties. The labelling of sample 5, therefore, needs comment. There is no evidence that this sample of fruit was grown in Germany. It is almost certain that it is Mogadore coriander which was probably obtained through the port of Hamburg.

## CONCLUSIONS

The following conclusions were drawn.

1. Samples with less than 75 (average 66.5) fruits per gram and showing purple patches are Moroccan or Mogadore coriander.

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2. Samples between 80 and 110 (average 98) fruits per gram are English or Roumanian coriander (the Polish samples 7 and 11 were not commercially available material.)

3. Samples with over 130 (average 161) fruits per gram are German, Hungarian, Polish or Russian coriander.

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## REFERENCES

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