

STUDIES IN MAHABALESHWAR HONEY-PART 'IV' VITAMIN CONTENTS (PANTOTHENIC ACID, BIOTIN, PYRIDOXINE AND CHOLINE)

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Very little information is available in the literature on the pantothenic acid, biotin, pyridoxine and choline content of honey. The following investigation was undertaken to supply the above data with Harda, Gela, Jambhul and Pisa varieties of honey obtained from Mahabaleshwar.

Experimental and Results

Estimation of Pantothenic acid: Five g of honey were diluted to 50 ml with glass distilled water. 0.25, 0.5, 1 & 1.5 ml of this solution was pretreated with chicken liver extract and alkaline intestinal phosphatase for a more complete liberation of bound forms of pantothenic acid as indicated by Neilands and Strong¹ Pantothenic acid was estimated microbiologically using *L. Arabinosus* 17/5 and the medium of Skeggs and Wright.²

Estimation of biotin: Five g of honey was hydrolysed with 15 ml of 6N HCl at 15 lbs pressure for 2 hours. The solution was cooled, neutralised with 20% NaOH to pH 6.8 and made to 100 ml and filtered. 0.5, 1, 3 and 5 ml of filtrate was taken for the assay and estimated microbiologically using *L. Arabinosus* 17/5 and medium of Skeggs and Wright.³

Estimation of pyridoxine: Five g of honey was diluted to 50 ml of 0.05 N HCl, and was autoclaved at 15 lbs pressure for 4 hours, cooled, and the pH was adjusted to 4.5 with 5% NaOH. It was made to 100 ml with glass distilled water and filtered. 0.25, 0.5, 1.0 and 2.0 ml portion of the filtrate was taken and pyridoxine was estimated microbiologically by Atkin *et al*⁴ method using *saccharomyces carlbergensis* 4226 as a test organism

Estimation of choline: Five g of honey was hydrolysed with 10 ml of 3% H₂SO₄ at 15 lbs pressure for 2 hours. The contents

of the flasks were cooled, neutralised with 15% NaOH, made upto 50 ml and filtered. 1, 2, 4 and 6 ml of this filtrate were taken and choline was estimated microbiologically using cholineless X-ray mutant of the mould *Neurospora Crassa* (34486) (obtained from N. C. L., Poona) and the medium of Horowitz and Beadle.⁵

Results of pantothenic acid, biotin, pyridoxine and choline estimation are given in table I.

Table-I Pantothenic acid, biotin, pyridoxine and choline content of honey

Samples	Pantothenic acid (μ g/100 g of honey)	Biotin	Pyridoxine	Choline (mg/ 100 g of honey)
Harda	92.4	3.2	18.0	2.2
Gela	68.6	2.8	12.0	1.6
Jambhul	108.0	6.8	12.0	2.8
Pisa	120.2	8.0	32.8	3.4

Discussion

It can be seen from the table that from 68 to 120 μ g of pantothenic acid per 100 g of honey is present in samples of honey. Pantothenic acid content showed a marked variation. The results obtained agree well with those of Haydak and Palmer⁶ and those of Kitze *et al*⁷. Their values for Minnosita and American honeys are 25-192 μ g and 9-60 μ g per 100 g respectively. Pisa honey was found to be richer source of pantothenic acid than the other 3 varieties. Biotin content varied from 2.8 to 8 μ g per 100 g in the samples of honey. Results obtained showed larger amounts of biotin than those reported by Kitze *et al*⁷ in American honey. Mahabaleshwar honey contains a fair amount of biotin.

Samples of honey showed 12 to 32 μ g per 100 gm of pyridoxine. The least vari-

ation was found in pyridoxine content of different samples.

From table I it can be seen that samples of honey contain about 2.5 mg (per 100 g) of choline. Pisa variety showed highest percentage of choline

Summary

1) Pantothenic acid, biotin, pyridoxine and choline values of 4 varieties of honey were estimated microbiologically.

2) Samples of honey contained fair amounts of above vitamins.

3) Amongst the varieties of honey tested, Pisa variety of honey was found to be the richest in the vitamins studied.

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