Phytochemistry, 1971, Vol. 10, pp. 219 to 220. Pergamon Press. Printed in England.

SHORT COMMUNICATION

TANNINS IN BLACK PLUM SEEDS

I. S. BHATIA, K. L. BAJAJ and G. S. GHANGAS

Department of Chemistry and Biochemistry,
Punjab Agricultural University, Ludhiana, India

(*Received* 24 *March* 1970)

Plant. Species—*Syzygium cumini* (Linn) (Skeels), Syn. *Eugenia jambolana* (Lam.) family: Myrtaceae; order: Myrtiflorae.

Uses. Medicinal purposes, for cure of diarrhoea, dysentery and diabetes.[1,2]

Previous work. On edible portion of the fruit,[3] on flowers,[4] on sister species.[5] P.C. in BAW (4:1:5) and 2% AcOH shows 35 phenolic compounds; 17 of these appear as violet spots under u.v. light with or without NH_3. Hydrolysis studies and the use of spray reagents (bis-diazotised benzidine,[6] sat. KIO_3,[7] $NaIO_4$–benzidine)[8] shows that most of the phenolic compounds are hexahydroxydiphenoyl-galloyl esters of glucose.

Corilagin. Occurs as such, and also as the major intermediate product of acid hydrolysis of tannin, identified by P.C. in different solvent systems.[9,10] Acid hydrolysis gives gallic acid, ellagic acid and glucose.

Hexahydroxydiphenoyl-glucose. Blue in u.v., turning yellow with NH_3. Two isomeric forms, isolated by TLC-cellulose. Positive reaction with aniline phthalate and with $NaIO_4$–benzidine. Identified by its acid hydrolysis products: ellagic acid and glucose.

1-*Galloyl-glucose.* Positive reaction with $NaIO_4$–benzidine, negative with aniline phthalate isolated TLC-cellulose, identified by its hydrolysis products, glucose and gallic acid.

Hexa-hydroxydiphenic acid. Confirmed Co-PC authentic sample and its conversion to ellagic acid under acidic conditions.

Ellagic acid and gallic acid. In free form in ethanolic extract along with above compounds. Confirmed by Co-PC with authentic samples in different solvent systems.[11]

On a dry wt. basis, the tannin content in the seed as well as the edible portion of the fruit decreased as the fruit matured. The tannin content in the seed and new leaves was fairly high. The edible portion of the fruit, buds and flowers had comparatively less tannin

[1] R. N. CHOPRA, S. L. NAYAR and I. C. CHOPRA, *Glossary of Indian Medicinal Plants*, p. 161 and 238, C.S.I.R., New Delhi (1956).
[2] J. F. DASTUR, *Medicinal Plants of India and Pakistan*, p. 106, D. B. Taraporevala, Bombay (1962).
[3] J. N. SHARMA and T. R. SESHADRI, *J. Sci. Ind. Research* **14B**, 211 (1955).
[4] A. G. R. NAIR and S. S. SUBRAMANIAN, *J. Sci. Ind. Res.* **21B**, 457 (1962).
[5] H. A. CANDY, E. J. MCGARRY and K. H. PEGEL, *Phytochem.* **7**, 889 (1968).
[6] G. LINDSTEDT, *Acta Chem. Scand.* **4**, 448 (1940).
[7] E. HASLAM, unpublished work [cf. *The Chemistry of Vegetable Tannins*, p. 95, Academic Press, London (1966)].
[8] J. A. CINONELLI and F. SMITH, *Anal. Chem.* **26**, 1132 (1954).
[9] K. K. REDDY, S. RAJADURAI, K. N. SASTRY and Y. NAYUDAMA, *Australian J. Chem.* **17**, 238 (1964).
[10] S. M. PATRIDGE, *Nature* **164**, 443 (1949).
[11] W. E. HILLIS and A. CARLE, *Appita* **13**, 74 (1959). [cf. W. E. HILLIS, *Wood Extractives and Their Significance to the Pulp and Paper Industries*, p. 244, Academic Press, London (1962)].

content. By P.C. of ethanolic extract, it was observed that the seed represented the most complex part in terms of phenolics present. The edible portion of the fruit, the new leaves and the flowers had almost identical pattern of distribution. The buds contained very few phenols out of which gallic acid and ellagic acid were predominant.

Acknowledgement—One of the authors (K. L. B.) is thankful to the University Grants Commission, New Delhi for providing financial assistance in the form of a Junior Research Fellowship.