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Chemical Examination of Flowers of *Asparagus gonocladus* Baker

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ASPARAGUS gonocladus, Baker[1] (N.O. Liliaceae) known as Shakakul in Hindi is used in the indigenous system of medicine for various ailments. Previous studies have shown the presence of asparagine[1] in other species.

The fresh flowers were repeatedly extracted in the cold with successive quantities of methanolic hydrochloric acid (1%). The red coloured combined extract so obtained responded to colour tests for the presence of anthocyanins[2]. Paper chromatographic examination revealed the presence of only one anthocyanin which was crystallised from a mixture of acetone and ether as red crystals, $C_{29}H_{35}O_{17}Cl$, m.p. 165°(d), λ_{max}530 nm, ν_{max}^{Nujol} 3380, 1638, 1555, 1498, 1460, 1432, 1346, 1180, 1042, 932, 910, 886, 820,...,etc. cm^{-1}. The compound on hydrolysis with 7 per cent. sulphuric acid yielded Malvidine chloride, $C_{17}H_{15}O_7Cl$, m.p. above 300°, λ_{max}542 nm, ν_{max}^{Nujol} 1640, 1550, 1500, 1464, 1430, 1350, 1170, 1040,..., etc. cm^{-1}, and glucose (identified by co-chromatography with the authentic sample and osazone formation). The quantitative estimation of sugar moiety by colorimetric method[3] showed the presence of glucose and Malvidine chloride in the molar ratio of 2 : 1. The anthocyanin was identified to be Malvin chloride by mixed m.p. with the authentic sample.

The flowers were washed with ethanol and then exhaustively extracted with 80 per cent. ethanol. The ethanolic extract responded to colour test with ninhydrin for the presence of amino acids. Paper chromatographic examination revealed the presence of an amino acid. Its identity was confirmed by co-chromatography with the authentic sample of asparagine.

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Carboxylation of Pyrazolones and Application of the Products

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IN continuation of our reports on heterocyclic fungicides[1-4], in which it has been noted that 2-pyrazolin-5-one derivatives possess significant fungicidal activity against the rice blast fungus Pyricularia Oryzae, we have tried to synthesise some water soluble carboxy derivaties of 2-pyrazolin-5-ones herein, for their application as systemic fungicides. A compound, to behave as a systemic fungicide must have high water solubility in order to be absorbed by the rice plant from the soil. It has been observed that carboxylation of 2-pyrazolin-5-one nucleus renders it more water soluble.

It had been reported[5] that carboxylation of resorcinol can be effected by heating in water with potassium bicarbonate at 100°. As 2-pyrazolin-5-one nucleus has marked similarity with phenolic compounds, the same method is applied here to carboxylate 1-phenyl-3-methyl-2-pyrazolin-5-one and 3-methyl-2-pyrazolin-5-one.

Six carboxy acids were prepared and screened for antifungal activity against the fungus P. Oryzae by the standard method[6]. The details of the observations on these compounds are given in Table 1. It has been observed that all these compounds except compound No. 4, exhibited more fungicidal activity than the corresponding compounds without the carboxy groups. Fungicidal activity of all these later compounds have been reported earlier [1,8].

Amongst these, compounds 2 and 5 are found to be the most effective potential systemic fungicides,