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ROOT NODULES IN SOME MEMBERS OF ZYGOPHYLLACEAE GROWING AT KARACHI UNIVERSITY CAMPUS

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Bacterial root nodules in Zygophyllaceae were reported from sandy soils of Egypt by Sabet (1946) and Mostafa & Mahmoud (1951). Allen & Allen (1950) did not find any endophyte in root nodules of *Tribulus cistoides* L. Khan (personal communication) has also reported absence of nodules in Zygophyllaceae. On the basis of these contradictory reports a survey of Zygophyllaceae was made from Karachi University Campus Area. The soil around this area is poor in nutrition and varies from sand to clay loam in texture (Qadir *et al*, 1966). Three genera namely *Tribulus*, *Zygophyllum* and *Fagonia* were surveyed. Fig. 1 shows nodules on roots of *Tribulus terrestris* Linn, Fig. 2 shows nodules on roots of *Fagonia cretica* Linn., and Fig. 3 shows nodules on roots of *Zygophyllum simplex* Linn.

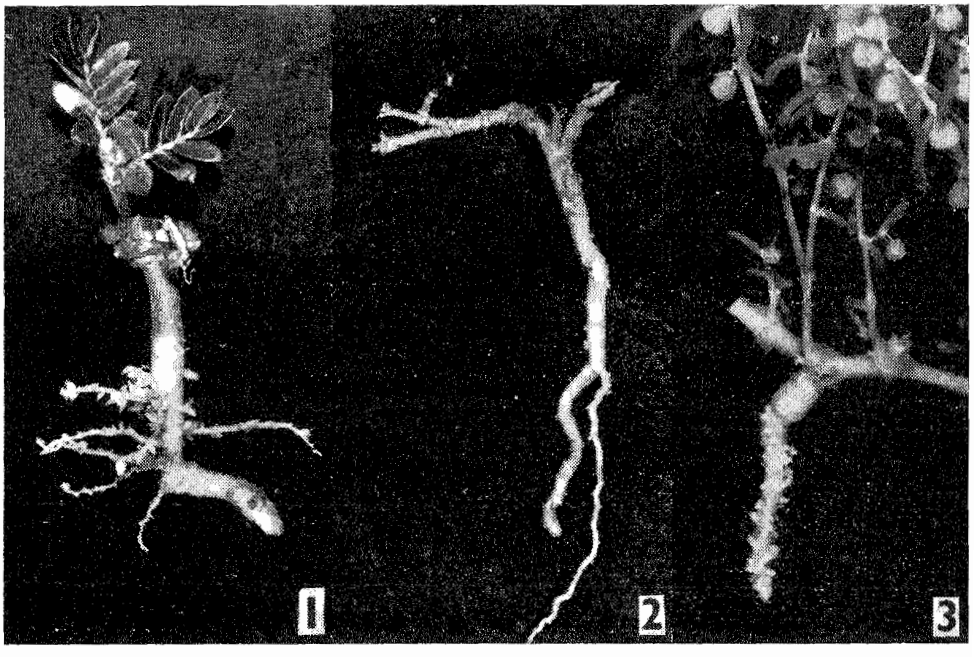

Fig. 1-3. Root nodules in some members of Zygophyllaceae.

1. *T ibulus terrestris.*
2. *Fagonia cretica.*
3. *Zygophyllum simplex.*

Study of the endophyte was made only from nodules of *Tribulus terrestris* and *Zygophyllum simplex*. In order to look for the endophyte, nodules were surface sterilized with 0.1% mercuric chloride solution. Surface sterilized nodules were crushed and cultured on nutrient agar, yeast extract mannitol and Congo red media.

Colony morphology of bacterium from *Zygophyllum simplex* and *Tribulus terrestris*:

i) *On nutrient agar medium.*
Small, round, opaque, whitish gummy colonies.

ii) *On yeast extract mannitol medium.*
Round, opaque, white, gummy colonies.

iii) *On Congo red medium.*
Organisms do not take colour of the medium (characteristic of Rhizobia) round somewhat transparent and gummy.
Organisms:—Gram negative short bacilli, capsulated.

On the basis of morphological observations made and Congo red test, it can be said that bacterium associated with nodule formation in *Tribulus terrestris* and *Zygophyllum simplex* belongs to the genus *Rhizobium*. These observations support Mostafa & Mahmoud (1951).

Further work on the remaining genera of Zygophyllaceae and the seasonal variations and moisture requirements for the optimum growth of nodules in Zygophyllaceae is being carried out.

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