Figure 1. *Pleurotus opuntiae.*

context fleshy. Hymenium with thick-walled, irregularly arranged hyphae, inamyloid, clamp connections present, sub-hymenium with thin-walled hyphae. Spore print white creamy. Spores hyaline, cylindric, ellipsoid, non-amyloid, thin-walled, 8–11 × 3.5–4.7 μm, cystidia absent.

The above description completely matches with the description given by Pegler[7]. The fungus was identified as *P. opuntiae* (Dur. & Lev.) Sacc. and the culture was deposited in the Indian Type Culture Collection, Division of Mycology and Plant Pathology, IARI, New Delhi, under Accession No. ITCC 3311.

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PHYLLODY OF *TEPHROSIA COCCINEA* WALL. (FABACEAE)

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TEPHROSIA COCCINEA is an undershrub distributed in western peninsular India[1,2]. It is rather rare in Marathwada region on the Deccan Plateau. Normal plants have 1–5-foliolate leaves with oblanceolate, emarginate leaflets that are glabrous and dark green on the adaxial surface and have densely appressed grey hairs abaxially. The flowers are pink and borne in leaf-opposed or terminal short racemes (figure 1a).

A peculiar individual of this species was collected in the Marathwada University Campus. In this plant the leaves were quite normal but all the flowers were replaced by clusters of bract-like outgrowths (figure 1b). All the whorls of floral appendages were transformed into green, ciliate bracts (figure 1c,d).

A review of the literature on plant diseases and teratomorphosis reveals that such abnormal and sterile specimens have been reported in a large number of cultivated as well as wild plants. The present specimen of *Tephrosia coccinea* is thus an addition to the list of abnormal specimens. A series of abnormalities progressing from a normal flower to completely vegetative branch has been termed antholysis[3]. This includes stages such as virescence (greening of floral parts), phyllody (development of floral parts into normal foliage), apostasis (the development of internodes theoretically present in the floral receptacles) and prolification (elongation of receptacle above the insertion of the pistil).

In the present case all the floral parts have been transformed into bract-like appendages. Abnormalities very similar to these have been particularly reported in *Crotalaria juncea* (Fabaceae)[4], *Sesamum indicum* (Pedaliaceae)[5], *Emilia sonchifolia* (Asteraceae)[6] and a few other plants. But the abnormal stages have been variously termed as phyllody[4,5] or invirescence[6].

At present nothing definite can be said about the abnormality in *T. coccinea* but it would be appropriate, on the basis of symptomology, to regard the present phenomenon as that of phyllody. In the various plant species mentioned above, the abnormal development of flowers has been reported to be due to infection by a virus or a mycoplasma-like organism. There is, however, a greater tendency to ascribe such plant abnormalities to the latter[7], especially after 1967.

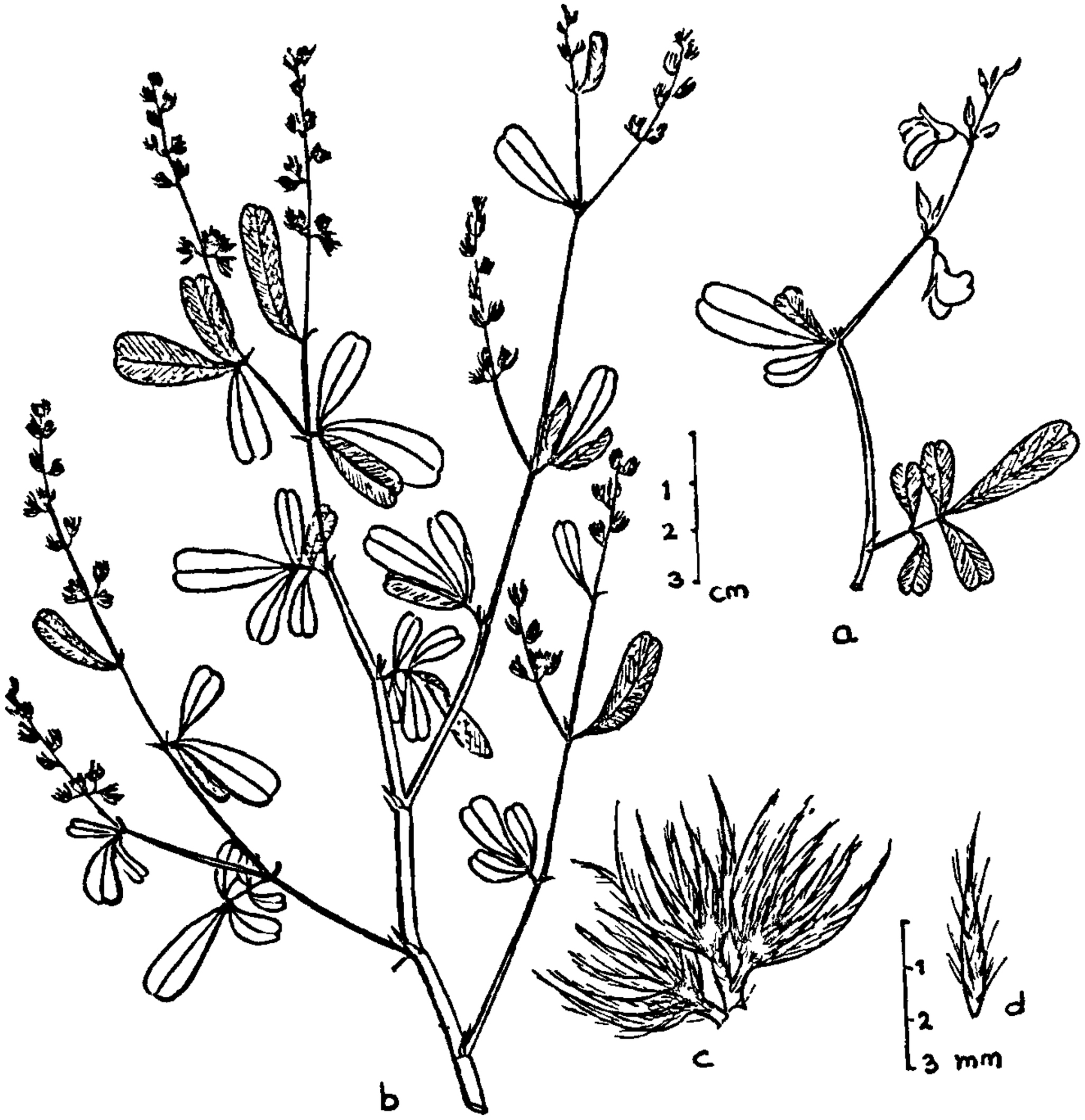

Figure 1. *Tephrosia coccinea* Wall. **a,** Twig of normal specimen; **b,** twig of abnormal specimen; **c,** cluster of bract-like appendages; **d,** single bract-like appendage.

Incidentally, it may be noted that the causal organism of the abnormal development of flowers appears to be very specific as the abnormality has not been observed in any other plant in the nearby vicinity, not even in allied species such as *T. hamiltonii* Drum. or *T. villosa* (L.) Pers., which are very common in the area. As far as the present author is aware, such an abnormality is being reported for the first time in *T. coccinea*.

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LOCALIZATION OF UREASE IN *ANABAENA DOLIOLUM*

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THE degradation of urea by micro-organisms is effected by either urease (urea amidolyase, EC 3.5.1.5) or ATP-urea amidolyase (UALase)[1]. The latter enzymatic process, also found in yeast and green algae, involves two distinct enzymatic activities: urea carboxylase (urea: CO_2 ligase (adenosine 5-diphosphate forming), EC 6.3.4.6) and allophanate hydrolase, EC 3.5.1.13. All blue-green algal species studied so far contain urease[2–4]. Urease from a bacterial system is a soluble enzyme located in the cytoplasm[5]. The present paper describes the localization of the enzyme urease in the blue-green alga, *Anabaena doliolum*.

A. doliolum was grown in modified Chu No. 10 medium[6] supplemented with 1 mM urea. The cultures were incubated at 24 ± 1°C and illuminated with daylight fluorescent tubes (intensity 2500 lux on the surface of the vessels) for 14 h per day. For preparation of cell-free extract, exponentially growing algal cultures collected by centrifugation were washed repeatedly with sterile distilled water and finally with 5 mM phosphate buffer, pH 7.3. The cells were ground in a pre-chilled glass mortar and pestle at 4°C in an ice bath with an equal volume of acid-washed sand. Crude enzyme was extracted with 5 mM phosphate buffer, pH 7.3. The supernatant collected after centrifugation was used for estimation of urease activity. For preparation of spheroplasts, algal cells were treated with ethylenediaminetetraacetic acid–lysozyme according to Neu and Heppel[7], with the modification that a 20% glycerol solution was substituted for sucrose solution to protect the spheroplasts[5]. Urease was estimated by determining the amount of urea decomposed within a given period of time at 37°C (pH 7.3). The reaction mixture contained 2 μmoles of urea in a final volume of 2 ml of 5 mM phosphate buffer (pH 7.3). The reaction was initiated by the addition of cell-free enzyme extract and terminated by the addition of 4 ml of mixed reagent used for the colorimetric assay of urea[8]. Protein was determined by the method of Lowry *et al.*[9] using bovine serum albumin as the standard.

Table 1 *Urease activity in whole cell extract and spheroplasts of Anabaena doliolum*

Fraction	Urease activity (nmol urea hydrolysed per mg protein per h)	Activity as percentage of that in cell extract
Whole cell extract	652.0	100.00
Spheroplast lysate	591.0	90.64
Supernatant (glycerol–tris buffer after sedimentation of spheroplasts)	15.0	2.30

Table 1 gives urease activity in whole cell crude extract, spheroplast lysate, and supernatant obtained after sedimentation of spheroplasts. Since most (90%) of the urease activity was found in spheroplast lysate (released from spheroplasts after osmotic shock and lysis), urease of *A. doliolum* is present in spheroplasts as a soluble enzyme.

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