AMENDMENTS TO APPENDICES I AND II OF THE CONVENTION

Other Proposals

A. PROPOSAL

Inclusion of Rauvolfia serpentina in Appendix II of CITES

B. PROPONENT

The Republic of India.

C. SUPPORTING STATEMENT

1. Taxonomy

11. Class: Dicotyledonae

12. Order: Apocynales

13. Family: Apocynaceae

14. Species: Rauvolfia serpentina (Linn.) Benth. ex Kurz. For. Flora Burma 2:171, 1877

15. Common Names:
English: rauvolfia
French:
Spanish:
Hindi: Sarpagandha

16. Code Numbers: Nil

2. Biological Data

21. Distribution: Rauvolfia serpentina is widely distributed in the sub-Himalyan tract from Himachal Pradesh eastwards to Sikkim and Bhutan, in Assam, in the lower hills of the Gangetic plains, eastern and western ghats, in some parts of central India and in the Andamans. Beyond India, the plant is distributed in Nepal, Bangladesh, Sri Lanka, Burma, Malaysia, Thailand, and Java (Indonesia).

22. Population: Although the range of distribution of Rauvolfia serpentina is very wide, its occurence is sporadic. The plants usually grow scattered, very seldom close to each other. Reliable data on the exact quantity of rauvolfia roots available for commercial purposes from different States in India are not available. Information, is however available in respect of a few areas as mentioned below:

Vishkhaptnam (Andhra Pradesh)	2.2 tonnes
Assam	40-50 tonnes
Burma and Cooch Behar (West Bengal)	8 tonnes
East Bastar and Bindrawagarth (Madhya Pradesh)	0.5 tonne
North Bastar (Madhya Pradesh)	24,000 plants

In Bihar, Sikkim, Tripura, Himachal Pradesh, Punjab, Madhya Pradesh, Karnataka and the Andaman Islands, plants are too scarce and as such, commercial exploitation from these areas may not be promising (Srinivasan, 1961). The species is reported to be threatened in Jammu & Kashmir. (Kapur, 1983). With the increasing demand in the world market, India which is a major supplier has been threatened with depletion of wild resources of the plant.

Experimental cultivation of this plant has been taken up in Uttar Pradesh (Dehradun), Bihar, Orissa, West Bengal (Ronge), Assam, Tamilnadu, Karntaka, Maharashtra and Gujarat. Among the research institutions experiments on propagation of Rauvolfia serpentina in Regional Research Laboratory, Jammu, and the Research Nursery at Indore.

23. Habitat: It is found usually in moist deciduous forests at altitudes ranging from sea level to 1200 m, it is seldom found in evergreen forests except at their very edges and is absent in open country. The plants are more frequent under the shade of Shorea, Ficus, Terminalia, Holarrhena, Cassia, Dalbergia, Mangifera and Adina spp.; sometimes they are found growing between clumps of Calamus. In the Deccan, they are found associated predominantly with bamboo forests, particularly, in freshly deforested area. It is noteworthy that wherever plants of Rauvolfia serpentina have been found, they are growing in close proximity to the beaten tract or to sites of habitation, whether ancient or recently abandoned. Such an association of this plant with sites of human habitation cannot be considered entirely accidental.

3. Trade Data

31. National Utilization: In recent years, rauvolfia and its preparations have become important therapeutic agents, both as anti-hypertensives and as sedatives. In India, rauvolfia has been employed for centuries for the relief of various central nervous system disorders, both physic and motor, including anxiety states, excitement, maniacal behaviour associated with psychosis, schizophrenia, insanity, insomnia and epilepsy. Extracts of the roots are valued for the treatments of intestinal disorders particularly, diarrhoea and dysentery and also as anthelmintic. Mixed with other plant extracts, they have been used in the treatment of cholera, colic and fever. Besides the root, its liquid extract and the tincture are official in Indian Pharmacopoeia.

There is a steady demand for the roots and most of the produce is exported, because only a small fraction is used by the Indian pharmaceutical firms. The important centres of marketing are Delhi, Amritsar, Saharanpur, Calcutta and Bombay.

32. Legal International Trade: Importance of the drug and of its major alkaloid reserpine, has been recognised in the allopathic system in the treatment of hypertension and as a sedative or tranquilising agent. Reserpine is official in the British Pharmacopoeia which includes the product obtained from Rauvolvia spp. or by synthesis (Lewis, 1956). Reserpine is added to poultry feed for growth promotion and feed efficiency; a combination of traces of reserpine and manganese bacitracin, with or without

procaine penicillin, is allowed in chicken and turkey feed in U.S.A. (Chem. Abstr., 1966). The National Prescription Audit (NPA) figures for 1973 for the U.S.A. indicate that rauvolfia crude drug was present in 0.30% of the total prescriptions in 1973.

Major part of the drug used in U.S.A. and European countries originates from India, Pakistan, Sri Lanka, Burma, and Thailand. Until a few years back, India has a world monoply in the export of the crude drug. Between 1963-64 and 1967-68, India exported over 400 metric tonnes of roots of rauvolfia alkaloids to Malaysia, Pakistan, Japan and other countries. Indian export figures of rauvolfia roots for 1978-79 are as follows (Sundresh, 1984):

Importing Country	Quantity (Kg.)	
	1977-78	1978-79
Mauritius	800	400
Pakistan	10,000	-
Singapore	5,000	-
Sri Lanka	275	-
Tanzania	660	-
U.A.E.	-	18,000
U.S.A.	2,100	150

The following table gives an idea about the export of rauvolfia alkaloids and preparations from India (Sundresh, 1984):

Year	Estimated Value in Indian Rupees
1978-79	195.7 thousands
1979-80	901.4 thousands
1980-81	83.5 thousands
1981-82	311.1 thousands
1982-83	438.6 thousands

The Government of India restricted the export of crude drug of wild origin in 1981-82 in order to conserve the natural growth from indiscriminate exploitation.

Export figures of other countries are not available.

33. Illegal Trade: Reports about illegal export of rauvolfia roots from India are often received. Consignments of rauvolfia roots being illegally exported are frequently seized by the customs and the wildlife authorities. During December 1988 the wildlife authorities seized at Bombay, 15 live species being exported to Muscat and 100 kg of powdered roots of rauvolfia being exported to Phillipines. Actual quantity of rauvolfia roots being smuggled from India is believed to be substantial.

34. Potential Trade Threats:

341. Live Specimens: Although cases of illegal trade in live specimens come to light from time to time, the magnitude of this type of trade appears to be insignificant at the moment.

342. Parts and Derivatives: Trade in rauvolfia is mainly in the form of roots and alkaloids. Despite their wide geographical distribution and edaphic tolerance, Rauvolfia species have not lent themselves to easy cultivation due to various factors which influence their propagation, growth and development and also their alkaloid content. At present most of the supplies of Rauvolfia serpentina roots are furnished by wild plants. Since supplies from wild sources are limited, it may not be possible to maintain a sustained and steady supply at the present rate of exploitation. Further, indiscriminate collection of roots has already denuded many forest areas in India of their natural growth and their conservation has become a problem.

4. Protection Status

41. National: Rauvolfia serpentina is included in Part A of Schedule I of the Export (Trade) Control Order-1988 and, therefore, export of live specimens, roots and other derivatives of this species from India is prohibited. Under the provisions of the Indian Forest Act, there are restriction on the collection of specimens of rauvolfia from the Reserved Forests.

42. International: Nil

43. Additional Protection Needs: Rauvolfia serpentina is a species having limited availability throughout its range but in great demand in international market. It is not necessarily now threatened with extinction but may become so unless trade in its specimens and derivatives is subject to strict regulation in order to avoid utilization incompatible with its survival. It is, therefore, essential to ensure international protection for the species by including it in Appendix II of CITES.

5. Information on Similar Species

There are reports that Rauvolfia tetraphylla in America and Rauvolfia vomitoria in Africa are being utilized to extract reserpine and other alkaloids. Roots of other Rauvolfia species such as Rauvolfia beddomei, Rauvolfia densiflora, Rauvolfia micrantha, Rauvolfia perakensis and Rauvolvia tetraphylla and those of Ophiorrhiza mungos and white and red flowered Clerodendrum spp. have also been found as adulterants.

6. Comments from Countries of Origin

Nil.

7. Additional Remarks

The species is now under cultivation, but the species of Rauvolfia have reportedly not responded well in cultivation and thus cultivation has not yielded enough stocks to meet trade requirements fully.

References

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