

# NOTES ON RAUWOLFIA AND ANCIENT MEDICAL WRITINGS OF INDIA

by

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RESERPINE, an alkaloid of the plant rauwolfia, has gained an established place in the treatment of hypertension and also as a tranquillizing agent in states of tension and anxiety. The presence of rauwolfia in Western medicine is new, and as far as the treatment of hypertension is concerned, it was largely the published observations of Rustom Jal Vakil in the *British Heart Journal* (Vakil, 1949) that drew the attention of the scientific world to the value of rauwolfia.

In its crude form, rauwolfia has been known in Indian materia medica for many centuries. The root and leaves are still sold by quacks in the bazaars and by medicine-men at village fairs in India today in much the same manner as in ancient times. A modern book on Indian materia medica (Nadkarni, 1954) describes age-old methods of preparation and lists uses for the decoction of rauwolfia root and the juice of its leaves. It is interesting then to look briefly at something of the background of Indian medicine.

The most ancient and authoritative medical writings of India are contained in the *Ayurveda* ('The Science of Life'), which describes means of keeping health, causes of ill-health and means of curing disease. According to Hindu tradition, *Brahma* is said to be the Creator of the Universe, and likewise in medical literature he is described as the originator of the *Ayurveda*.

Wilson's writings in the *Oriental Magazine* (Wilson, 1823) quoted by Royle (1837) in 'Lectures on Materia Medica and Therapeutics at King's College, London' are the first references in the English language to the genesis of the *Ayurveda*. Brief accounts of the genesis of Hindu medicine have also been made by recent historians, notably Muthu (1930), Ray (1937) and Zimmer (1948).

At first the *Ayurveda* was known only to *Brahma*. By him it was communicated to *Daksha Prajapati* and in turn through the *Prajapati* the two *Aswins*, or sons of *Surya*, the Sun, were instructed in it, and they then became the medical attendants of the gods. At this stage we cannot fail to recall the two sons of Aesculapius and their descent from Apollo. From the *Aswins*, *Indra* King of the Gods, learnt the *Ayurveda*. *Indra* was the preceptor of *Dhanwantari*, the Father of Hindu Medicine, who was said to have brought from the ocean, a cup of *Amrita*, the drink of immortality to mortals. *Dhanwantari* held his *Ayurvedic* University in *Kasi* (modern Benares), where he taught his disciple *Susruta* the surgeon, whose monumental work, the *Susruta Samhita*, together with another medical classic the *Charaka Samhita*, is contained in the *Ayurveda* as known

today. As customary even today *Susruta* pays respectful acknowledgements to all his medical forebears in the introductory part of the *Susruta Samhita* (translation by Bhishagratna, 1907). (Figs. 1 and 2 illustrate the genesis of the *Ayurveda*.)

The *Ayurveda* is divided into eight sections: 1. Surgery. 2. Diseases of the Eye, Ear, Mouth and Nose. 3. Internal Diseases like Fevers, Consumption and Diabetes. 4. Therapeutics. 5. Diseases affecting Children. 6. Antidotes for Poisons. 7. *Rasayana* or chemistry. 8. Means of strengthening the Generative Organs.

The dates of neither *Susruta* nor *Charaka* are accurately known, but a number of authorities (Bhishagratna, 1907, Mitra, 1914, Burridge, 1926, Muthu, 1930) believe them to be earlier than *Buddha* (563–483 B.C.) and to belong to the Vedic Period of Indian history (1000–500 B.C.). Little else is known about *Susruta* or *Charaka*, and an explanation is offered by the Kaviraj Kunja Lal Bhishagratna (1907):

In a country like India where life itself was regarded as an illusion, the lives of kings and commoners were deemed matters of little moment to the vital economy of the race, and all histories and biographies were looked upon as the embodiment of the flimsy vanities of life. . . . Authentic history we have none, beyond chronicles of state events and royal names in some instances.

*Ali-ibn Rabban-al-Tabari*, writing in A.D. 850, made a serious study of Indian medicine in the *Firdaus-ul-Hikmat*, wherein many references are made to the works of *Susruta* and *Charaka*. Indian medicine played a great part in the moulding of Persian theories of medicine. Translations of works including *Susruta* and *Charaka* appeared in Persian and Arabic and even the physician at the court of Harun-al-Rashid, of *Arabian Nights* fame, was an Indian called Manka (Elgood, 1951).

According to Professor Filliozat (1951), in the sixteenth century the Portuguese Garcia-da-Orta and in the seventeenth century the Dutchman Bontius were studying and reporting on Indian drugs. The first European translation of *Susruta* was published in Latin by Hessler over a century ago.

Wise (1867), Burridge and Muthu considered that the Hippocratic school of medicine (Hippocrates, c. 460–c. 357 B.C.) was strongly influenced by contact with India. A great number of Indian plants are mentioned in Hippocrates' *Materia Medica*, and it seems quite feasible that the east did go to the west during the time of the Persian Empire of Darius, which extended from Thrace and Macedonia in the west, to the Indus in the east just fifty years before Hippocrates' birth.

According to Hindu medical science, three fundamental humours, *Vayu*, or Nerve-force, *Pitta*, Metabolism and Heat Production, and *Kapha*, which presides over mucous and glandular secretions, maintain a healthy equilibrium of the organism. This is the *Tridosha* Doctrine of *Ayurvedic* medicine associated with the names of *Susruta* and *Charaka*, and it is interesting to note again that a similar doctrine of humours was introduced by the Hippocratic school of Greek medicine.

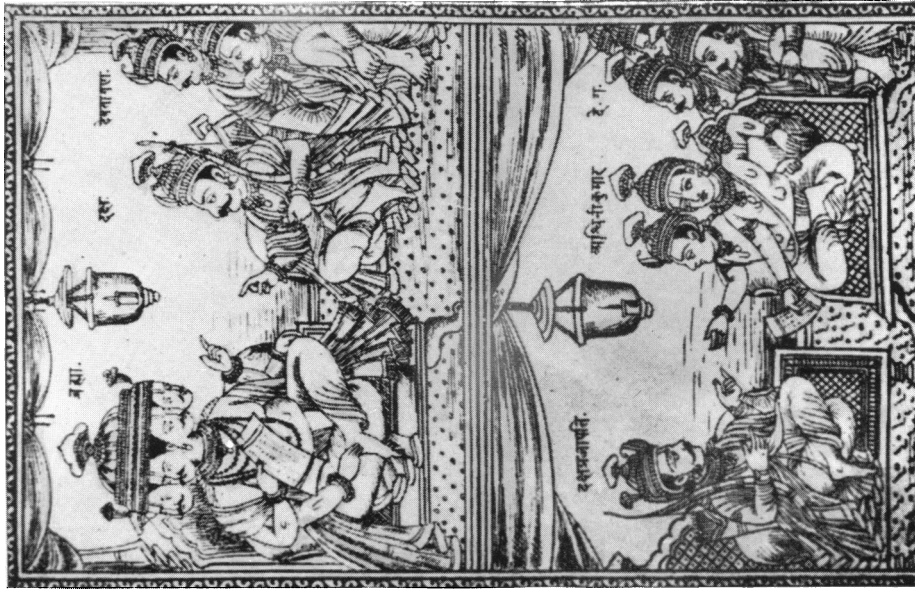


Fig. 1

Upper half of picture shows *Brahma* on left, teaching *Daksha Prajapati* on right. Heavenly figures are seated behind *Daksha*. Lower half of picture shows *Daksha Prajapati* teaching the twin *Ashwini* in turn. Heavenly figures seated behind *Ashwini*.

The legends are transliterations of the Sanskrit script that appears on the pictures.

(Figs 1 and 2, *eighteenth-century Indian print, from Castiglioni's A History of Medicine, 2nd edition.*)

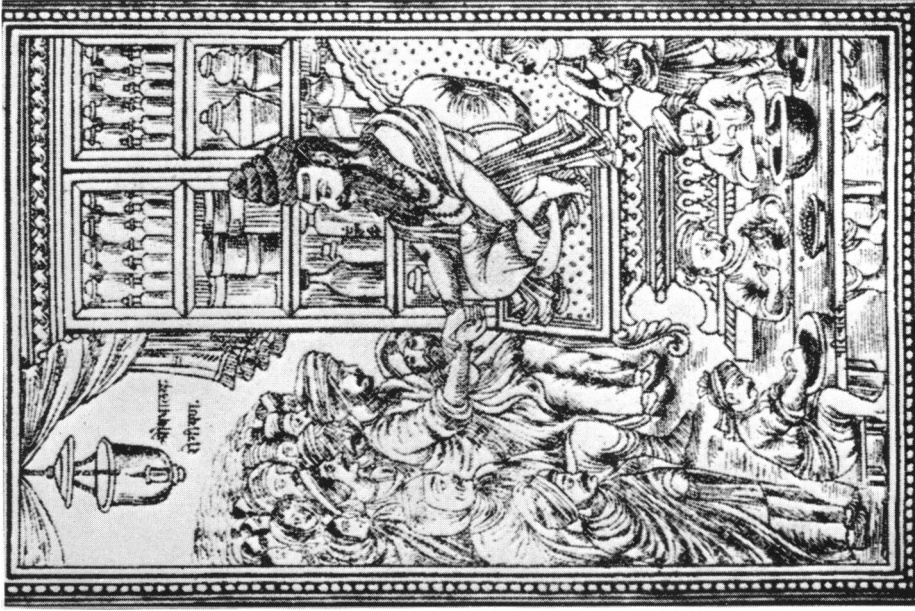


Fig. 2

*Susruta* at his dispensary with the sick (note the palpation of the radial pulse).




GEORGH EVERHARDI RUMPHII,  
*Med. Doct. Haeracensis, Mercatoris Senioris, & in Ambona Capellae,  
 nomine P. LINNII INDICI celeberris, & Membri Illustris So-  
 cietatis Academicæ Naturæ Curiosorum Germanicæ,*

**HERBARIUM  
 AMBOINENSIS  
 AUCTIONARIUM,**  
*Reliquis complectens Arborea, Fungos, ac Plantas,  
 QUAE IN AMBOINA,  
 ET ADJACENTIBUS DENUM REPERTAE SUNT INSULIS,  
 Omnes accuratissime descripsit, & delineatae juxta earum  
 formas, cum diversis Indicis denominationibus,  
 cultura, usu, ac viribus;*

*Nunc primum in lucem editum, & in Latium fermonem versum,  
 Cura & Studio*

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 Botanici,  
 Academicæ Curatoris Naturae curiosorum Socii.*

*Qui varia subiecit Synonyma, & saepe Observationes.*



Apud { *AMSTELÆDAMI,  
 M Y N A R D U M U Y T W E R F,  
 Viduam ac Filium S. S C H O U T E N,  
 M. D C C L V.*

Figs. 3 and 4  
 Engraving of rauwolfia plant from Rumphius' supplement to the  
*Herbarium Amboinense*, 1755.  
 (From *Woodson et al.*, *Rauwolfia*.)

Although *Susruta* is better known for his descriptions of operative surgery—his was the first description of rhinoplasty—and his catalogue of surgical instruments, the *Susruta Samhita* contains much material on drug therapy and a classification of medicinal plants. It is especially interesting to note that the plant identified centuries later by the name *Rauwolfia serpentina* is mentioned by the name *Sarpagandha*. The Sanskrit name is derived from two words, *Sarpa* m. snake—note the resemblance to the Latin *serpens*—and *gandha* m. smell. We can but speculate on the choice of the name. Perhaps the long tapering snake-like root suggested the name to the ancient Hindus or perhaps it was felt that snakes were attracted or repelled by the smell of the plant. Nobody seems to know.

*Susruta* prescribed the root as a decoction or with clarified butter, curd and milk, 'the whole should be duly cooked over a gentle fire', and praised it as an antidote for the bites of poisonous reptiles and the stings of insects. (*Susruta Samhita*, translation by Bhisagratna, 1911.)

Practitioners of *Ayurvedic* medicine used to live in houses surrounded by gardens of medicinal herbs or they would obtain their supplies of roots and leaves from herb-gatherers who used to collect their wares from the forests. *Ayurvedic* hospitals, too, maintained gardens of medicinal plants. According to Bhisagratna (1907), practitioners used to go out in the open streets, calling out for patients. Possibly, such indeed was the practice when *Sarpagandha* was first brought on to the 'market'.

A variety of therapeutic uses were consistently attributed to this drug, and some indeed have appeared over-enthusiastic. Its clinical uses continued in India over the centuries, and its widest use appeared to be as a sedative. The hypnotic action of the drug was evidently known to the people of Bihar, and the practice of putting children to sleep with this drug is still present in certain parts (Chatterjee, 1934). It was also used for insomnia, and in northern India became colloquially known as *pagla-ki-dawa* (Hindustani: drug for insanity) because of its effect in the treatment of mental disease. *Chandrika* (Sanskrit: pertaining to the moon), another name of *Sarpagandha*, seems strangely apt, considering its effects.

Credit must be given to the chemists and pharmacologists of India who first began to analyse crude preparations of *Rauwolfia serpentina*. Notable amongst them were Siddiqui and Siddiqui (1931), who isolated some of the alkaloids, and the late Sir Ram Nath Chopra of the Calcutta School of Tropical Medicine (Chopra, 1933; Chopra *et al.*, 1942), who demonstrated hypotensive and sedative effects under experimental conditions. Their reports led to the increasing use of rauwolfia in modern medicine in India for much the same purposes as in ancient days (Bhatia, 1942; Vakil, 1940). Later pharmacological studies particularly in America confirmed these actions. The most important alkaloid, reserpine, was identified by Muller *et al.* in 1952. Thus the ancient therapeutic claims originally made on an empirical basis have been confirmed beyond doubt by modern science, and the drug has proved to be of much use in the management of schizophrenia, maniacal states, Sydenham's chorea and withdrawal symptoms in chronic alcoholism and drug addiction.

Many and diverse are other actions ascribed to the drug in indigenous Indian medicine. Dymock *et al.* in *Pharmographia Indica* (1891) mentioned a number of uses which are apparently still claimed of the drug. The root is said to be of value in intestinal colic and other painful conditions of the bowel and is used to increase uterine contractions in labour. The juice of the leaves is claimed to be of benefit in corneal opacities (Nadkarni, 1954). The critical investigator cannot help feeling incredulous about them, but with the clinical vindication of earlier claims of *Rauwolfia serpentina*, who knows, perhaps more may yet be learnt about its pharmacology.

A few notes about the plant itself. It is a climbing shrub which grows at moderate altitudes in grasslands and shrubby forests in northern India, the Deccan, Ceylon, Java and Malaya. It belongs to the natural order Apocynaceae and is known by several local vernacular names. Other species of *rauwolfia* are to be found in Central and South America and West and Central Africa.

I am indebted to Dr. E. B. Woodson (1957) for the following notes on the early botanical accounts of *rauwolfia*.

*Rauwolfia serpentina* was apparently first illustrated by an engraving in the *Actuarium of Rumphius' Herbarium Amboinense*, published in 1755 (Figs. 3 and 4). Rumphius (Rumpf) (1627–1702), sometimes known as the 'Pliny of India', had been sent by the Dutch East India Company to the island of Amboina to write a book on useful and otherwise remarkable plants on the spice islands. The manuscript was published long after his death by Burman in Amsterdam, and the plant was labelled *Radix mustelae*. The genus was renamed *Rauwolfia*—later spelt *Rauwolfia* in the fourth edition of Linnaeus' *Species Plantarum* (Linnaeus, 1798)—in honour of a sixteenth-century Near East traveller and botanist of Germany, Leonhart Rauwolf.

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#### REFERENCES

- BHATIA, B. B. (1942), *J. Indian Med. Ass.*, xi, 262.  
BHISHAGRATNA, K. K. (1907), *An English Translation of the Sushruta Samhita*, vol. i, publ. the author, Calcutta, from the preface.  
BHISHAGRATNA, K. K. (1911), *An English Translation of the Sushruta Samhita*, vol. ii, publ. the author, Calcutta, pp. 727, 732.  
BURRIDGE, W. (1926), *Indigenous Systems and Medical Science*, Pioneer Press, Allahabad, from the preface.  
CHATTERJEE, D. N. (1934), *Drugs of India*, publ. the author, Calcutta.  
CHOPRA, R. N. (1933), *Indigenous Drugs of India*, The Art Press, Calcutta, p. 373.

*Notes on Rauwolfia and Ancient Medical Writings of India*

- CHOPRA, R. N., BOSE, B. C., GUPTA, J. C., and CHOPRA, I. C. (1942), *India J. of Med. Res.*, xxx, 319.
- DYMOCK, W., WARDEN, C. J. H., HOOPER, D. (1891), *Pharmographia Indica*, Kegan Paul, Trench Trubner & Co., London, II, p. 415.
- ELGOOD, C. (1951), *A Medical History of Persia*, Cambridge University Press, Cambridge, p. 371.
- FILIOZAT, J. (1951), in Foreword to JOLLY, J., *Indian Medicine*, trans. from German and publ. by Kashikar, C. G., Poona.
- LINNAEUS, C. (1798), *Species Plantarum*, 4th ed., p. 1217.
- MITRA, S. M. (1914), *XVIIIth International Congress of Medicine*, London, 1913, Henry Frowde, Oxford University Press, p. 363 *et seq.*
- MULLER, J. M., SCHLITTLER, E., and BIEN, H. J. (1952), *Experientia (Basel)*, viii, 338.
- MUTHU, D. C. (1930), *A Short Account of the Antiquity of Hindu Medicine*, 3rd ed., Ballière, Tindall & Cox, London.
- NADKARNI, K. M. (1954), *India Materia Medica*, 3rd ed., Popular Book Depot, Bombay and Dhootapapeshwar Prakashan, Panvel, p. 1050.
- RAY, D. N. (1937), 'The Principle of Tridosha in Ayurveda and Original Sanskrit Texts', S. C. Bannerjee, Calcutta, from the *Historical Introduction*, p. 1 *et seq.*
- ROYLE, J. F. (1837), *The Antiquity of Hindoo Medicine*, Wm. H. Allen and J. Churchill, London, p. 56.
- SIDDIQUI, S., and SIDDIQUI, R. H. (1931), *J. Indian Chem. Soc.*, viii, 667.
- VAKIL, R. J. (1940), *Med. Bull. (Bombay)*, viii, 15.
- VAKIL, R. J. (1949), *Brit. Heart J.*, xi, 350.
- WILSON, H. H. (1923), *Oriental Magazine*, Calcutta, February and March 1823, quoted by Royle (1837).
- WISE, T. A. (1867), *History of Medicine*, J. Churchill, London, from the Introduction.
- WOODSON, R. E. (1957) in *Rauwolfia, Botany, Pharmacognosy, Chemistry and Pharmacology*, Little, Brown & Co., Boston.
- ZIMMER, H. R. (1948), *Hindu Medicine*, The Johns Hopkins Press, Baltimore, p. 46.