



TRIBAL USES OF MEDICINAL PLANTS OF RAJASHTHAN:KACHNAR.

SANTOSH SHARMA AND *ASHWANI KUMAR

Department of Botany, S.S. Jain Subodh Girls College, Jaipur *Department of Botany, University of Rajasthan Jaipur 302004.

ABSTRACT

Ethnobotany can be defined as the total natural and traditional relationship and the interactions between man and his surrounding plant wealth from times immemorial, due to sheer, necessity, intuition, observation and experimentation. Ethnobotany of India might be among the earliest in the world and all traditional systems of medicine had their roots in ethnobotany. Rajasthan has rich cultural diversity and biodiversity. Around seven percent of tribals of India live in Rajasthan. Present paper presents use of medicinal plants by tribal people in general and Rajasthan in particular. *Bauhinia* sp Kachnar are important ingredients of tribal and traditional systems of medicine.

Key words: Guni, Ozha, Ethnobotany, Rajasthan, Traditional medicines, Kachnar, *Bauhinia variegata*.

INTRODUCTION

Tribals are, in general, the followers of animism. It leads to the belief that diseases and death are caused by certain spirits or supernatural powers. These beliefs have a great influence on their attitude and psychology about the ailments. In fact, it also leads to the concept of a number of Gods and different deities who are supposed to be associated with the cause of diseases.

1. Tribal mythological uses of medicinal plants.

There are several processes by which a 'Gunin' or 'Ojhas' may perform his ritual of treatment. The choice of ritual depends upon his personal liking or skill.

1.1.1 Curing by invocation or souls etc.

These 'Ojhas' or 'Gunin' diagnose and treat the diseases basically under two phases. During first phase, they diagnose the diseases by different modes of divination like, one is, they take black

mustard seeds and utter the names of God or Demons. Another mode of divination called oil divination in which oil obtained from various plants and trees, sometimes from leaves of Sal (*Shorea robusta* Gaertn. F.) are taken and certain magical words are uttered. Another method is called urine divination. In this the urine is carefully examined by blowing air in it. If there is anything like oil recorded in it, the patient is the victim of Tejo (worms).

1.1.2. Curing by herbal medicines

If after completion of the first phase, involving magic, exorcism, sacrifices and propitiation fails to cure, the second phase of treatment, that is administration of medicinal plants in the form of infusion, decoction, or as tea, paste, pills and mixture or with other ingredients or other plant parts is given both internally as well as applied externally. Generally local doctors like 'Vaidyas'

and Haranic prescribed the herbal medicines. Some medicine men claim to decide prescriptions through guidance in dreams. In general, the tribal medicine men use roots, whole plants and vines whereas women use leaves and flowers. But stem bark, wood and seed are used both by men and women practitioners. In some cases they favour symptomatic remedies, such as formulation, massage and poultice. Generally they use single drug in combination with the seeds of long pepper (*Piper longum* Linn.) and compound drug in combination with the seeds of black pepper (*Piper nigrum* Linn.). It indicates that certainly the tribal people have had specific knowledge about the therapeutic value of the plants (Mittre, 1981).

2.1 Use of some of the medicinal plants in traditional medicine:

2.1.1. Kachnar (*Bauhinia variegata* Linn.)

Bauhinia variegata Linn. (Fabaceae) is a valued medicinal plant. Besides this, *B. tomentosa* Linn., *B. racemosa* Lam., *B. retusa* Roxb., *B. vahlii* Wight and Arn., *B. purpurea* Linn. have also been reported to have medicinal value. Kachnar is a medium sized deciduous tree, bark dark brown, nearly smooth, young shoots brown-pubescent. Flowers large, fragrant, white or purplish, appearing when the tree is leafless. It is distributed in sub-Himalayan tract and outer Himalayas of Punjab, ascending to 1300 m from the Indus eastwards, Kumaon between 200-2000, in Sikkim, extending from India to Burma and China.

Kachnar is known by various names in different languages

Common name	:	Mountain ebony
Bengali	:	Raktakanchan
Hindi	:	Bariyal, Gurial, Gwiar, Kachnar, Kandan, Kaniar, Khairwal, Khawairaal, Koliar, Padrian
Konkani	:	Kanchan
Malayalam	:	Kovidaram, Suvannamandaram, Unna
Marathi	:	Kanchan, Raktakanchan, Thaur
Mundari	:	Burju, Buruju
Sanskrit	:	Ashmantaka, Asphota, Chamari, Chamarika, Champavidala, Gandari, Girija, Kanakaprabha, Kanchanala, Kanchana, Kanchanara, Kanchanaraka, Kantar, Karaka, Karbudara, Karbudara, Kovidara, Kuddala, Raktapushpa, Shonapushpaka, Suvarnara, Svalpakkesara, Tamrapushpa, Uddalaka, Yamalachada, Yugapatraka, Yugmapatra
Tamil	:	Mandarai, Segappumandarai, Semmandarai, Vellaippuvatti.
Telugu	:	Bodanta, Devakanjanamu, Kanjanamu, Mandara, Mandari
Urdu	:	Kachnal
Uriya	:	Boroda, Kosonaro, Kanjoni, Ronga-Konjono.

Kachnar is known by different names in various parts of world.

Burmese	:	Bwaycheng, Bwechin
Canarese	:	Arisinantige, Ayata, Bilikanjivala, Irkubalitu, Kanjivala, Karalabhogi, Kempukanjivala, Kempumandara, Mandara, Ulipe
French	:	Arbe de saint Thomas, Bauhinie panachee (Kirtiker and Basu, 1935).

It is popular among tribal and non-tribal people of the country by various names

Santhals	:	Kouar, Buriju-dar
Saora	:	Boda, Rovilara
Lodhas	:	Koch-nar

The tribal and non-tribal people of different areas use the plant in several ways for the treatment of skin diseases (leucoderma and leprosy), wounds, ulcers, cough, dysentery, snakebite, tumours, flatulence, indigestion, piles and also lots of other ailments.

- Lodhas prescribe root bark decoction, about 15 ml per day for reducing obesity. They apply stem bark paste in the treatment of leucoderma and take fresh flower paste with sugar (2: 1 w/w) as a laxative (Plate-4-I).
- Mundas give flower decoction 20 ml to women as a galactagogue and prescribe dried flower bud powder with water (1: 3 w/v) as vermifuge.
- Santhals give powder of flower buds with paste of black peppers (5: 3 w/w) to women to regulate vaginal discharge.
- Andh and Bhil use the leaf as laxative.
- Chakma use the flower for the treatment of women's diseases.
- Bhojas of U.P. use the flower for cure of diarrhoea and dysentery and bark for the cure of malaria and bleeding piles. The bark is also used for the treatment of snakebite and ulcers; the flower and bark both for curing tumours and root and root bark both for the treatment of obesity and indigestion in different parts of Uttar Pradesh (Shah and Joshi, 1971; Sharma *et al.*, 1979; Bhalla *et al.*, 1982 and Megoneitso and Rao, 1983).
- The flower is used to cure diarrhoea and both leaves and flowers are eaten in North-Eastern regions of the country (Bhargava, 1959; Gupta, 1962; Jain and De, 1966; Ball, 1967; Rajwar, 1983; Pal, 1984 and Negi *et al.*, 1985).
- Plant bark is used for the treatments of leprosy and scrofula in Maharashtra, Madhya Pradesh and Andhra Pradesh.
- The young unopened flowers of *Bauhinia purpurea* and *Bauhinia variegata* find way to tribal markets of Garo, Kuki and Mizo tribe along with the flowering twigs (acidic in taste) of *Vaccinium serratum* Wight and are eaten cooked (Jain, 1997).
- In the Konkan, the juice of the fresh bark is given as an expectorant and the bark is used with dried ginger (*Zingiber officinale* Rosc) as an internal remedy for scrofula (Kirtiker and Basu, 1935) (Plate-4-I).
- In Indo China and Philippine islands, an infusion of the new flowers is given in dysentery.
- South Indians use decoction of the leaves to allay headache in malarial fever.
- Its bark reported to be used in dyeing to obtain various fast shades of brown colour. The plant is good fodder for cattles (Anonymous, 1956).
- According to ancient Hindu literature, red flowers of Kachnar are compared with women's beauty.
- Kachnar is considered as sacred to Buddha (Pal and Raychaudhary, 1982). *Bauhinia variegata* is widely used in Ayurvedic and Yunani medical system. Ayurvedic literature describes the plant in Sanskrit in the form of a poem.

Kachnar is astringent, cool and acrid in taste.

Specific action:

constipating, depurative, anthelmintic, vulnerary and anti-inflammatory.

Therapeutic use:

Cures intestinal worms, leprosy, tumour, wounds, ulcers and goitre.

It also cures diarrhoea, dysentery, inflammations, scrofula, proctoptosis, haemorrhoids, haemoptysis, menorrhagia and diabetes. There are two varieties of Bauhinia-red and white.

Ayurveda :

Red flowered variety:

The bark acrid, cooling, laxative, appetising, astringent to bowels in lower doses, cures biliousness, ulcers, tuberculosis and leprosy. The flowers are acrid, dry, sweet, cooling, astringent, galactagogue, cure diseases of the blood, bronchitis, consumption, vaginal discharges, biliousness and headache. The juice of the root is given internally in snakebite.

White flowered variety:

The bark is acrid, sweet, appetising, cooling, astringent to the bowels, cures biliousness, leucoderma, anal troubles, tuberculosis, cough, asthma, diseases of the blood, ulcers, vaginal discharges; anthelmintic, used in strangury, thirst and burning sensation (Kirtiker and Basu, 1935).

- Roots carminative, decoction prevents obesity. Bark tonic and anthelmintic, used in scrofula and cutaneous troubles; bark as well as flowers used as pot herbs; flower buds pickled. Leaves and pods eaten as a vegetable. Leaves used for bidi manufacturing. Wood used for agricultural implements (Anonymous, 1986).
 - **Yunani :** The bark is astringent to the bowels, liver tonic, cures bilousness, leucoderma, leprosy, dysmenorrhoea, menorrhagia, impurities of the blood, tuberculosis, asthma, wounds and ulcers; used as a gargle in stomatitis. The buds are acrid; indigestible; used in piles, cough, eye diseases, liver complaints; astringent to the bowels, styptic in haematuria and menorrhagia.
 - **Charak Samhita and Sushruta Samhita:** The root is prescribed in combination with other drugs for the treatment of snakebite (Anonymous, 1963).
Ayurveda employs kachnar in the preparation of several medicines / formulations / decoctions for the treatment of various ailments.
1. Fresh bark of kachnar mixed with dry ginger pounded with sour gruel is an excellent remedy for goitre. Decoction of Kachnar and pippali (*Piper longum* Linn.) powder or swarna bhasma is also beneficial (Sharma, 1996).
 2. The bark of *Bauhinia* tree used as decoction in doses j

***Bauhinia purpurea* Linn.**

Common name : (Purple mountain ebony)

Hindi	:	Gairal, Kaliar, Kandan, Katniar, Khairwal, Koilari, Koinar, Sona
Sanskrit	:	Raktapushpakovidara
Marathi	:	Atmatti, Deva Kanchana, Rakta Kanchan
Tamil	:	Kalavilaichi, Mandarai
Telugu	:	Bodanta, Kanjanamu
Uriya	:	Boroda, Debokanjoro
Burma	:	Mahahlegani

It is known by various names by different tribes

Bhil	:	Kanchana
Santhals	:	Baper
Lodhas:		Kochner, Sing-ara
Mundas	:	Sapidanka

- Lodhas prescribe root bark paste with rice water (water obtained after washing rice) (3:1 w/v) for ripening of boils. They use pounded stem bark in the treatment of rheumatism and give dried flower powder as laxative.
- Oraons give dried root powder with water (2:3w/v) to patients suffering from rheumatism.
- Mundas prescribe dried root powder with Brassica oil (1:1w/v) as balm on cuts and wounds. They apply stem bark paste for healing bone fracture (Pal and Jain, 1998).
- Bhoxa use the bark as an astringent.
- Khasi tribe and non-tribal people of Assam region use stem in bone fracture, flower in indigestion and bark is used for curing of small pox.
- In South India, Sikkim, Bengal, Bihar and Orissa, leaf is used for the treatment of jaundice and for cure of wounds and tumour in stomach (Jain and De, 1966; Sharma *et al.*, 1979; Kumar *et al.*, 1980; Karnick *et al.*, 1981; Rao and Jamir, 1982 and Apparantham and Chelladurai, 1986).
- It is eaten as vegetable in different parts of India like U.P., North-East region and central part of India (Gunjatkar and Vartak, 1982).
- Naga use the plant as an antidote to certain toxins and poisons (Bedding, 1927; Jain and Tarafder, 1970 and Rao and Jamir, 1982).

Ayurveda:

The root is carminative. The bark acts as an astringent in diarrhoea. Its decoction is recommended as a useful wash in ulcers. The flowers are laxative. The bark or root and flowers together mixed with rice water are used as a maturant for boils and abscesses.

***Bauhinia vahlii* Wight and Arn.**

Common name : ***Malucreeper bauhinia or camel's foot climber***

Hindi	:	Jallur, Malghan, Maljan, Maljhan, Mahul, Malo, Malu, Maulein, Maurain
Marathi	:	Chambal, Chambil, Chambura, Charbor, Maljan
Tamil	:	Mandarai
Telugu	:	Adattige, Madapu, Muduka
Uriya	:	Shiali, Shioli, Siyali

It is known by various names by different tribes

Saora	:	Addotige
Santhals	:	Bir-gungu-nari, Sihari-chop
Lodhas	:	Sehari, Jom-lar
Oraons	:	Lamak-lar

- Oraons prescribe root juice with curd (2:1 v/v) as cure of dysentery.
- Lodhas give stem bark paste with butter milk and rice beer (2:1:1) thrice a day, in the treatment of diarrhoea. They apply leaf paste with paste of black peppers (2:1w/w) on boils for suppression. They apply mucilage of stem bark to cattle for healing bone fracture. These people extract vegetable tannin from stem bark and use it for tanning the skin of cold-blooded animals.
- Lodhas and Santhals use the dichotomous tendrils as magical safeguard against evil activities of supernatural powers. Santhals use the plant in stomachache and dysentery (Jain and Tarafder, 1970).
- Flower is used as an antifertility agent in Bihar.
- Bhoxa tribe and non-tribal people of Tehri Garwal region use the seeds as an aphrodisiac and tribes of Terai region of Gorakhpur district use the seeds as vermifuge (Sharma *et al.*, 1979).
- Bhumiya and Agariya tribe of Madhya Pradesh use the leaf for making cigarettes

(bidis) and the seeds as tonic (Jain, 1963; Sharma *et al.*, 1979 and Roy and Chaturvedi, 1987)

- Fruits are eaten in West Bengal, Maharashtra and Goa.
- Seeds are also eaten as vegetable in Morni and Kalesar of Haryana, Bastar district of M.P. and Kumaon (Jain, 1963, 1964; Ball, 1967; Vartak, 1981; Maji and Sikdar, 1982; Gunjatkar and Vartak, 1982; Jain, 1984 and Bhujel *et al.*, 1984).

According to Ayurvedic literature, the seed possesses tonic and aphrodisiac properties. Leaves are demulcent and mucilaginous.

***Bauhinia racemosa* Lamk.**

Common name : **Common mountain ebony**

Hindi	:	Ashta, Asoda, Dhorara, Ghila, Kachnal, Marvil, Maula
Sanskrit	:	Anupushpaka
Marathi	:	Apata, Apta, Kanraja, Seyara, Shiara
Tamil	:	Ar, Arai, Aram
Telugu	:	Adiviyavise, Are
Uriya	:	Omborda

Names known by different tribes

Santhals	:	Beriju
Lodhas	:	Kaimu
Oraons	:	Ambulata

- Lodhas use dried root bark powder as vermicide and they prescribe stem bark decoction with that of Gara-Ratan (*Terminalia arjuna* (Roxb.)Wt.and Arn.) (2:1) in the treatment of throat diseases. They give this gum along with long pepper decoction (1:1) to patient in brain tumours. Decoction of leaves is taken in the treatment of malarial fever.
- Santhals give root bark decoction with paste of black peppers (3:1) to epileptic patients. They rear fine fibres from the stem bark and use it for stitching of deep cuts on animal body (Pal and Jain, 1998).

- Oraons use fresh leaf paste as a remedy for urinary diseases.
- Some ethnic communities give stem bark extraction with cow milk (3:2) as cure of glandular inflammation.
- Bhils use the stem fibre for making baskets (Joshi, 1982).
- Tribes of Western region of country use the leaf in making Bidi (Mittre, 1981).
- Bhils of Rajasthan use the plant bark in diarrhoea and dysentery and eat the fruits.
- **Ayurveda:** Stem bark is used for dysentery and diarrhoea and as an astringent. Leaf is used for malaria and headache. The fibre is used to stitch wounds. The plant is also used to cure skin diseases like leprosy and leucoderma. The gum is used medicinally in South India (Kirtiker and Basu, 1935).

***Bauhinia retusa* Roxb.**

Common Name :	Semla	
Hindi	:	Kanalla, Kandalu, Kandra, Kanla, Kwayral
Telugu	:	Goddukura, Godduyare,
Godi-sep	:	
Soara	:	Are

This plant is also medicinally important.

- Santhals use the plant for curing cholera and snakebite (Jain and Tarafder, 1970).
- Gum is applied on sores and leaf bud is eaten in Garhwal region of U.P.
- Some Indian practitioners consider it as an emmenagogue and diuretic.

***Bauhinia tomentosa* Linn.**

Common Name :	Wild Champak	
Hindi	:	Kachnar, Kanchana
Sanskrit	:	Aswamantaka, Phalgu
Tamil	:	Kanjini

- In the Malabar Coast, a decoction of the root bark is administered in inflammation of the liver.

- The native practitioners in Southern India prescribe the small dried buds and young flowers in dysenteric affections.
- The decoction of the root bark is also used as vermifuge.
- The bruised bark is externally applied on tumours and wounds.
- The fruit is diuretic, an infusion of the bark is used as an astringent gargle (Kirtiker and Basu, 1935).
- Sushruta Samhita : All parts of the plant are recommended in combination with other drugs for the treatment of snakebite and scorpion-sting. In the case of snakebite, the fresh seeds are made into a paste with vinegar, and applied externally to the affected part.
- *Bauhinia malabarica* Roxb. and *Bauhinia macrostachya* Wall are also medically valued species as they cure several ailments like dysentery, diarrhoea and skin lesions.

REFERENCES

1. Sastri, B.N. 1956. The wealth of India (A dictionary of Indian raw materials and industry). CSIR, New Delhi.
2. Apparathanam, T. and V. Chelladurai. 1986. Glimpses on folk medicines of Dharamapuri forest division, Tamil Nadu. *Anc. Sci. Life.* 5 : 182-185.
3. Ball, V. 1967. Notes on principle jungle fruits used as articles of food by the natives of the districts of Maunbhoom and Hazaribagh. *J. Asiat. Soc.* 11 : 73-82.
4. Bedding, P.O. 1927. Studies in Santal medicines and connected folklore. *Mern. Asist. Soc. Bengal.* 10 : 1-427.
5. Bhalla, N.P., T.R. Sahu, G.P. Mishra and R.N. Dakwale. 1982. Traditional plant medicines of Sagar Distt. Madhya Pradesh. *India. J. Econ. Tax. Bot.* 3 : 23-32.
6. Bhargava, K.S. 1959. Unusual and Supplementary food plants of Kumaon. *J. Bombay Nat. Hist. Soc.* 56 : 26-31.
7. Bhujel, R.B., K.K. Tamang and G.S. Yonzon. 1984. Edible wild plants of Darjeeling district. *J. Bengal Nat. Hist. Soc.* 3 : 76-83.
8. Dutt, U.D. 1989. The *Materia medica* of the Hindus. Mittol Publications. Delhi. 132-134.
9. Gupta, R.K. 1962. Some unusual and interesting food plants of the Garhwal Himalaya. *J.D. Agric. Torp. Bot. Appl.* 9(11-12) : 532-535.
10. Gunjatkar, N. and V.D. Vartak. 1982. Enumeration of wild edible legumes from Pune district, Maharashtra State. *J. Econ. Tax. Bot.* 3 : 1-9.
11. Harshberger, J.W. 1896. The purpose of ethnobotany. *Bot. Caz.* 21 : 146-154.
12. Jain, S.K. 1997. Contribution to Indian ethnobotany. Scientific Publishers. India. 29-312.
13. Jain, S.K. 1991. Dictionary of Indian folk medicine and ethonobotany. Deep Publication. New Delhi. 261-296.
14. Jain, S.K. and J.N. De. 1966. Observations on ethnobotany of Purulia district, West Bengal. *Bull. Bot. Surv. India.* 8 : 237-251.
15. Jain, S.K. and C.R. Tarafder. 1970. Medicinal plant lore of the Santhals. *Econ. Bot.* 24 : 241-278.
16. Jain, S.K. 1963. Studies in Indian ethnobotany. Plants used in medicine by the tribals of Madhya Pradesh. *Bull. Reg. Res. Lab.* 1 : 126-127.
17. Jain, S.K. 1964. Wild plant foods of the tribals of Bastar (Madhya Pradesh). In : *Proc. Nat. Inst. Sci. India.* 30B : 56-80.
18. Jain, S.P. 1984. Ethnobotany of Morni and Kalesar (Ambala-Haryana). *J. Econ. Tax. Bot.* 5 : 809-813.
19. Joshi, P. 1982. An ethnobotanical study of Bhils. *J. Econ. Tax. Bot.* 3 : 257-266.
20. Kirtiker, K.R. and A.D. Basu. 1935. Indian medicinal plants Oriental Enterprises. Dehradun. India.
21. Kumar, Y., K. Haridasan and R.R. Rao. 1980. Ethnobotanical notes on certain medicinal plants among some Garo people

- around Balphakram Sanctuary in Meghalaya. *Bull. Bot. Surv.* 22 : 161-165.
22. Karnick, C.R., K.C. Tiwari, R. Majumdar and S. Bhattacharjee. 1981. Newer ethnobotanical and folklore studies of some medicinal plants of Gauhati and surrounding areas. *Nagarjun.* 24 : 240-245.
23. Mittre, Vishnu. 1981. Wild plants in Indian folk life – A historical perspective. In : *Glimpses of Indian ethnobotany*, (S.K. Jain, ed.). Oxford and IBH Publishing Co. New Delhi. 37-58.
24. Megoneitso and R.R. Rao. 1983. Ethnobotanical studies in Nagaland-sixty two medicinal plants used by the Angami Nagas. *J. Econ. Tax. Bot.* 4 : 167-172.
25. Maji, S. and J.K. Sikdar. 1982. A taxonomic survey and systematic census on the edible wild plants of Midnapore district, West Bengal. *J. Econ. Tax. Bot.* 3 : 717-737.
26. Negi, K.S., J.K. Tiwari and R.D. Gaur. 1985. Economic importance of some common trees in Garhwal Himalaya. An ethnobotanical study. *Indian J. Forestry.* 8 : 276-289.
27. Pal, D.C. and E. Raychaudhary. 1982. Some folklore about plants. *Folklore.* 23(11) : 248-250.
28. Pal, G.D. 1984. Observations on ethnobotany of tribals of Subansiri, Arunachal Pradesh. *Bull. Bot. Surv. India.* 26 : 26-37.
29. Pal, D.C. and S.K. Jain. 1998. Tribal medicine. Naya Prakash. Calcutta. 317.
30. Rajwar, G.S. 1983. Low altitude medicinal plants of South Garhwal. *Bull. Medico-ethnoboty. Res.* 4 : 14-28.
31. Rao, R.R. and N.S. Jamir. 1982. Ethnobotanical studies in Nagaland-1 : Medicinal Plants. *Econ. Bot.* 36 : 176-181.
32. Roy, G.P. and K.K. Chaturvedi. 1987. Less known medicinal uses of rare and endangered plants of Abujhmarh research area, Bastar (Madhya Pradesh). *J. Econ. Tax. Bot.* 9 : 325-328.
33. Sharma, P.V. 1996. Classical uses of medicinal plants. Chaukhambha Vishwa Bharti. Varanasi. 93-397.
34. Sharma, P.K., S.K. Dhyani and V. Shanker. 1979. Some useful and medicinal plants of the district Deharadun and Siwalik. *J. Sci. Res. Pl. Med.* 1 : 17-43.
35. Shah, N.C. and M.C. Joshi. 1971. An ethnobotanical study of Kumaon region of India. *Econ. Bot.* 25 : 414-422.
36. Van-Zeist, W. and W.A. Casparie. 1984. Plants and ancient Man, studies in Palaeo-ethnobotany. Balkema. Rotterdam.
37. Vartak, V.D. 1981. Observations on wild edible plants from hilly regions of Maharashtra and Goa. In : *Glimpses of Indian ethnobotany*, (S.K. Jain, ed.). Oxford and IBH Publishing Co. New Delhi. 261-271.