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Review Article

MEDICINAL PROPERTIES OF BALA (*SIDA CORDIFOLIA* LINN. AND ITS SPECIES)

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ABSTRACT

The Indian system of medicine, *Ayurveda*, medical science practiced for a long time for disease free life. It relies mainly upon the medicinal plants (herbs) for the management of various ailments/diseases. Bala (*Sida cordifolia* Linn.) that is also known as "Indian Ephedra" is a plant drug, which is used in the various medicines in *Ayurveda*, *Unani* and *Siddha* system of medicine since ages. It has good medicinal value and useful to treat diseases like fever, weight loss, asthma, chronic bowel complaints and nervous system disease and acts as analgesic, anti-inflammatory, hypoglycemic activities etc.

Bala is described as *Rasayan*, *Vishaghana*, *Balya* and *Pramehaghna* in the Vedic literature. *Caraka* described *Bala* under *Balya*, *Brumhani dashaimani*, while *Susruta* described both *Bala* and *Atibala* in *Madhur skandha*. It is extensively used for Ayurvedic therapeutics internally as well as externally. The root of the herb is used as a good tonic and immunomodulator. *Atibala* is in *Atharva Parisista* along with *Bala* and other drugs. *Caraka* described it among the *Balya* group of drugs whereas *Carakapani* considered it as *Pitbala*. *Atibala* is quoted in the *Nighantus* in the context of *Bala catustaya*. *Nagbala* or *Gangaruki* are not found in *vedic* literature. *Nagbala* term is used by *Bruhatrayi* repeatedly whereas *Gangeruki* which is synonym of *Nagbala* is mentioned thrice only. The present review explained on the *sida* species and the traditional uses, Ayurvedic preparation and pharmacological properties.

KEY WORDS: *Bala*, *Atibala*, *Nagbala*, *Mahabala*, *Sida cordifolia*, *Abutilon indicum*, *Sida veronicaefolia*, *Sida rhombifolia*.

INTRODUCTION

The Indian system of medicine, *Ayurveda*, Medical science practiced for a long time for disease free life. Its relies mainly on the medicinal plants (herbs) for the management of various diseases/ailments. In *Ayurveda* a wide range of the medicinal plants described in *Nighntus* and its text books. Among of these plants are extinct and some are unidentified upto now. Few plants are still used as the richest source of medicine since the ages. *Bala* (*Sida cordifolia* Linn.) is one of such plant, which is being used in the medicine of *Ayurveda*, *Unani* and *Siddha* systems of medicines since ages.

Bala and its specious classified in various *Ayurveda samhitas* as *Bala dvaya* (*Bala*, *Atibala*)^[1-6], *Bala traya* (*Bala*, *Atibala*, *Nagabala*)^[7-10], *Bala chatushta* (*Bala*, *Atibala*, *Nagbala*, *Mahabala*)^[11], *Pancha Bala* (*Bala*, *Atibala*, *Nagbala*, *Mahabala*, *Rajabala*)^[12].

In this regard, medicinal properties of *Bala* (*Sida cordifolia* Linn.) are being explored to enumerate the pharmacological potential of the drug.

As a medicine more than one species of *Sida* being used as *Bala*, like *Sida cordifolia* Linn, *Sida acuta* Burm, *Sida rhombifolia* Linn., *Sida spinosa* Linn., *Sida retusa* etc. *Sida spinosa* is also used as *Sweta Bala*^[13].

1. *Bala* – *Sida Cordifolia* Linn.
2. *Atibala* – *Abutilon indicum* (Linn.) Sw.
3. *Nagbala* – *Grewia hirsute* Vahl,
Sida veronicaefolia Lam.
Syn. *Sida humilis* Cav.
4. *Mahabala* – *Sida rhombifolia* Linn.

They are more than one species of *sida* i.e *Sida acuta* Burm., *Sida. rhombifolia* Linn. and *Sida Spinosa* Linn^[14]. He also described *Sida Spinosa* Linn (*Nagbala* 2) and *Grewia hirsuta*, Vanb. (*Nagbala*-3)^[15].

Vernacular names^[16-20]

	Bala (<i>Sida Cordifolia</i> Linn)	Atibala (<i>Abutilon indicum</i>)	Nagabala (<i>Sida veronicaefolia</i>)	Mahabala (<i>Sida rhombifolia</i> Linn.)
Sanskrit	Badiyalaka, Bala, Baladhya, Balini, Bhadra, Bhadrabala, Bhadrodani, Brela, Jayanti, Kalyanini, Kanaka, Kathorayashtika, Kharakakashatika, Kharayashtika, Krura, Motapati, Nilaya, Odanavha, Odani, Odanika, Phanijivaka, Prahasa, Raktatandula, Samanga, Samansha, Shitapaki, Suvarna, Svetherela, Variga, vataghni, Vatyalaka, Vatyali, Vatyapushpi, Vilala	Atibala, Balika, Balya, Bhuribala, Ghanta, Kankati, Kankatika, Rishiprokta, Shita, Shitapushpa, Vikankata, Vatyapushpika, Vrishyagandha, Vrishyagandhika, Kankatika, Rshyaprokta	Avishta, Bhadrandani, Chatupala, Devadanda, Gangeruki, Ghanta, Gorakshatandula, Hrisvagvedhuka, Jhasha, Kharagandha, Kharagandhini, Kharavallika, Kharyashtika, Mahagandha, Mahapatra, Mahaphala, Mahashakha, Mahodaya, Nagabala, Pila, Pitberela, Vishvadeva, Vishvadevi Bhumibala	Atibala, Pitapuspi, Ahikhanda, Atibala, Bala, Barela, Brihadagala, Devaarha, Devabala, Devasaha, Gandhavallari, Gandhavalli, Jyeshthabala, Karambhara, Kesarika, Keshawardhini, Keshruha, Lalbarila, Mahabala, Mahagalarthaprasadini, Mahagandha, Mriga, Mrigadini, Mrigarasa, Pitapushpa, Pitapushpi, Prasadini, Sahadeva, Sahadevi, Samanga, Sarini, Varshapushpa, Varshpushpi, Vataglani, Vaty, Vatyayani
English	Country Mallow	Indian Mallow	Snake mallow	
Family	Malvaceae	Malvaceae	Malvaceae	Malvaceae
Bengali	Bala, Barila, Brela, Svetberela, Badela	Badela, Potari, Jhampi	Junka, Bonmethi, Gorakchaulia, Pilabarela,	Pitabedala, Kheriti, Pitabala, Pithala, Svetbarela
Gujrati	Baladana, Khareti, Bal, Bala,	Kansaki, Khapat, Dabali, Kansaki	Bhoyabala, Kantalobal,	Mahabala, Baladana
Hindi	Barial, Bariar, Khareti, Kharenti, Kungyi, Variyara	Kanghi, Jhampi, Kandhi, Kanghani, Kanghi, Potari, Tepari, Kakahi	Bananiyar, Bhiunli, Kharenti, Bariara, Gangeran, Gulsakari, Janglimethi, Khareti	Pitabala, Pitabariyar, Bariara, Bhiunli, Kharenti Pitabala, Sahadebi, Sahadeva, Swetharela
Kannada	Hettuti	Shrimudrigida, Mudragida, Turube, Tutti		Kisangihettutti-gida
Malayalam	Kutturam, Velluruma	Uram, Katuvan, Vellula, Urubam, Urabam, Vankuruntott, Oorpam, Tutti, Katturam, Katturan, Pitikkapattu, Tutti, Tuvatti, Uram, Velluram	Kattaventiyaam, Mayirmanikkam	Anakkuruntotti, Totti, Valankuruntotti, Vatturam
Marathi	Chikana, Khiranti	Chakrabhendi, Petari, Mudra, Akakai, Kansuli, Karandi, Madmi, Mudra, Mudrika, Pidari, Vikankati	Bhoybal, Bhuichikna, Gandedhaman, Gangeti, Kanteritukati	Mahbala
Punjabi	Kharent, Kharayati	Kangi, Kangibooti		Khurunti
Tamil	Arivalmanaippundu, Nilatutti, Paniyara tutti	Tutti, Thuthi, Nallatutti, Paniyarattutti, Perundutti, Tutti	Palampasi, Arivalmanaippundu, Mayiramanikkam	Kurunthotti, Anaikurundotti, Kurundotti, Tenacham
Telugu	Antisa, Chirubenda, Muttavapulagamu, Suvarnamu, Tellagorra, tellantisa	Adavibenda, Botlabenda, Dudi, Muttavashirubenda, Nurubenda, Peddabenda, Tittitichettu, Tutti, Tutturubenda	Gayapuwaku, Chinnamuttamu, Chinnamuttavapulagamu, Mayilumanikyam, Muttavapulagamu, Ternallabenda, Tirinelabenda	Gubatada, Pedda Mutheera Pulagum, Atibala, Gubatada, Mayilumanikyau, Muttavapulagamu
Urdu		Kanghi		Pan

PROPERTIES AND ACTION

	Bala ^[21]	Atibala ^[22]	Mahabala ^[23]
Rasa	Madhura	Madhura	Madhura
Guna	Laghu, snigdha, picchila,	Snigdha	Guru, Snigdha, Picchila
Virya	Sita	Sita	Sita
Vipaka	Madhura	Madhura	Madhura
Karma	Vatapitta shamak, Vedanasthapana, Shotahara, Balya, Vatahara, Grahi, Hrudyta, Raktapitta shamak, shukrala, Prajasthapana, Mutrala, Jvaragna, Balya, Brumhana, Ojovardhaka	Grahi, Vatahara, Balya, Vrsya	Vataghna, Pittaghna, Grahi, Sukravarddhikara, Ojovardhaka, Kṛntivardhaka, Balya

Botanical Description

Bala

Bala is a one of the herb in Brumhani dashaimani⁽²⁴⁾, Balya dashaimani⁽²⁵⁾, *Madhura skandha*⁽²⁶⁾, Vatashamaka varga⁽²⁷⁾, Madhyama Panchamula⁽²⁸⁾

Synonyms

Baladhya, Bhadra, Bhadrabala, Bhadraudani, Kalyanini, Kharakasthika, Mahasamanga, Mota vati, Odanahvaya, Odanika, Samamsa, Sitapaki, Udanika, Vati, Vatya, Vatyalaka, Vatyalika, Vatyodarahvaya⁽²⁹⁻³²⁾.

Bala (*Sida cordifolia* Linn.) is a shrubby, branched, softly, hairy with much stellate hair nearly all over subsistent. Leaves are 2.5 to 5 cm. long cordate, ovate, oblong, crenate, obtuse or subacute, not acuminate; petioles 1.2-3.8 cm. long. Pedicels, solitary or few together, short, some up to 1.2-2 cm long, jointed much above the middle. Corolla slightly exceeding the calyx yellow. Fruit 6-8 mm diam. carpels 7-10 strongly reticulated ciliate on the upper margins⁽³³⁾.

The seeds are grayish black in colour and smooth. The plant flowers from August to December and fruiting occurs from October to January⁽³⁴⁾.

The leaves of Bala contain small quantities of ephedrine and pseudoephedrine⁽³⁵⁾, roots and seeds contain alkaloid ephedrine, vasicinol, vasicinone and N-methyl tryptophan⁽³⁶⁻³⁸⁾ and are extensively used as a common herbal drug^(39,40). Due to ephedrine, various Ayurvedic preparation of this herbs are used in asthma, fat lose, increase energy⁽⁴¹⁾, chronic dysentery and gonorrhoea in the Indian subcontinent^(42,43), recently cardiovascular effects⁽⁴⁴⁾, analgesic, anti-inflammatory, and hypoglycemic activities⁽⁴⁵⁾ were reported for its leaves.

In the Ayurvedic text also *Bala* is useful in the treatment of *Shleshmika paittika* type of diarrhoea⁽⁴⁶⁾, *Vatarakta*^(47,48) serious *Vata* diseases⁽⁴⁹⁾, Galaganda^(50,51), *Vataja mutrakrucha*⁽⁵²⁾, *Vataja jvara*⁽⁵³⁾, *Pittakaphaja jvara*⁽⁵⁴⁾, *Pittaja atisara* in Ama stage⁽⁵⁵⁾, *Kaphaja* heart disease⁽⁵⁶⁾, *Amaja trushna*⁽⁵⁷⁾,

Pittaja svarabeda⁽⁵⁸⁾, urinary calculus and urinary disorders⁽⁵⁹⁾, wound healing⁽⁶⁰⁾.

Bala one of the drug in management of useful diet all types of *Atisara*⁽⁶¹⁾, medicated drink in *Atisara*⁽⁶²⁾, Bala oil for massage of care and rituals of new born baby⁽⁶³⁾, *Bala* oil with massage to *Sutika* (puerperium)⁽⁶⁴⁾, treatment for 6th month abortion⁽⁶⁵⁾, enema in 8th month of pregnancy⁽⁶⁶⁾, enema therapy in various diseases⁽⁶⁷⁻⁶⁹⁾.

Bala is one if the drug in *Bala tail*^(70,71), *Balamula rasayana*⁽⁷²⁾, *Pathadi ghruta*⁽⁷³⁾, *Kalashyadi ghruta*⁽⁷⁴⁾, *Panchagavya ghruta*⁽⁷⁵⁾, *Sahasra paka bala*⁽⁷⁶⁾, *Shatapaka bala taila*⁽⁷⁷⁾, *Baladi churna*⁽⁷⁸⁾, *Bala ghrutam*⁽⁷⁹⁾, *Candanabalalakhadi taila*, *Baladi kvatha*, *Baladyarishtha*, *Baladyaghruta*⁽⁸⁰⁾.

In the experimental study root extract of *Sida cordifolia* shows Analgesic, Antiinflammatory and Hypoglycaemic activities⁽⁸¹⁾, Anti microbial activity of leaf extract of *sida cordifolia* on *Staphylococcus aureus*, *Enterococcus fecalis*, *Pseudomonas aeruginosa*, *Proteus mirabilis* (bacteria), *Candida albicans*, *Cryptococcus neiformans* (fungi)⁽⁸²⁾.

Sida cordifolia leaf extract posses maximum activity against *B. subtilis* and *S. aureus* (18 mm) and the 16 mm similar zone of inhibition observed in *E. coli*, *P. fluorescens* and *X. a. pv. malvacearum*. Root extract of this plant showed highest inhibitory activity against *B. subtilis* and *S. aureus* and least activity observed in *E. coli*⁽⁸³⁾.

Atibala

In the Ayurvedic text, *Atibala* is one of the herb in *Madhura skandha*⁽⁸⁴⁾ *Balya dashaimani*⁽⁸⁵⁾, *Vata shamaka varga*⁽⁸⁶⁾.

Synonyms

Balaka, *Balika*, *Balya*, *Bharavaji*, *Bhuribala*, *Ghanta*, *Kankata*, *Kankatika*, *Rusyaprokta*, *Shita*, *Shitapushpa*, *Vatyapushpi*, *Vatyapushpika*, *Vikankata*, *Vrshyagandha*, *Vrukshagandhini*, *Vrushya*, *Vrushyagandhika*⁽⁸⁷⁻⁹⁰⁾.

Atibala (*Abutilon indicum* (Linn.) Sweet. is a perennial softly tomentose shrub up to 3m. height. Leaves are cordate, ovate toothed or slightly lobed,

long-petioled 3.8-7.5 cm long, stipules 9mm long, linear, acute deflexed. Pedicel is often 2.5-5 cm long, axillary, solitary and is jointed very near the top. Calyx is 12-8 mm long, divided to the middle; lobes ovate, apiculate. Corolla is 2.5 cm in diameter and is yellow; open in the evening. Staminal tube is hairy at the base; filaments long. Carpels are usually 15-20, longer than the calyx, with a distinct small acute point, hairy, ultimately shining and dark brown. Seeds are brown-black, densely and minutely scrobiculate⁽⁹¹⁾.

The flowers appear golden yellow and fruits are appear almost throughout the year, but mainly seen in the months of August-December. This plant commonly found almost in every region of India and other countries like Sri Lanka, Pakistan, Nepal, etc. In India, it is common weed on road sides and other waste places and hills upto 600 m^(92,93).

Atibala is useful in the diseases like *Pittaja atisara* in *Ama* stage⁽⁹⁴⁾, *Vatarakta*⁽⁹⁵⁾, *Tridosha timira*⁽⁹⁶⁾, *Kaphaja pratishyaya*⁽⁹⁷⁾, *Vata* diseases poultices purpose⁽⁹⁸⁾, recipe for management of the foetal malpresentations⁽⁹⁹⁾, urinary and the seminal disorders⁽¹⁰⁰⁾, *Meha*, *Raktapitta*⁽¹⁰¹⁾.

Atibala found in the *Balamula rasayana*⁽¹⁰²⁾, *Bala ghruta*, *Bala Taila*, *Narayana Taila*, *Maha Narayana Taila*⁽¹⁰³⁾ formulations.

Sida acuta

Sida acuta Brum. fl. Ind. is a shrubby, much branched, branches slender terete, minutely stellately hairy. Leaves 2.5-6.3 cm long, lanceolate with rounded base sharply serrate, glabrous on both sides, petioles 0-6 mm. long shorter than the stipules. Pedicels 1-2 in each axil, shorter or longer than the petiole jointed about the middle. Calyx 6-8 mm. long, lobes triangular acute. Corolla nearly twice as long as the calyx yellow. Fruit 5-6 mm in diam., not pubescent, strongly reticulated, toothed on the dorsal margins. Seeds smooth black. It is found in hotter parts of India. Generally in tropics area.

Root sour and sweet, removes tridosha, digestive and diuretic, useful in fever, burning of the bosy and urinary discharges⁽¹⁰⁴⁾.

Mahabala

Synonyms

Bhrhatphala, *Bruhadbala*, *Devarha*, *Devasaha*, *Gandhavallari*, *Harshapuspa*, *Jyesthabala*, *Katambhara*, *Kesavardhini*, *Kesharika*, *Kesharuha*, *Mruga*, *Mrugadani*, *Mrugarasa*, *Pitapushpa*, *Pitapushpi*, *Purasani*, *Sahadeva*, *Sahadevi*, *Sarini*, *Varipushpi*, *Vatya*, *Vatyapuspi*, *Vatyayani*⁽¹⁰⁵⁻¹⁰⁷⁾.

Sida rhombifolia Linn. Sp. Pl. is a small erect under shrub, branches rough with stellate hairs. Leaves very variable in shape up to 5 cm by 18 mm glabrous or subglabrous above grey-pubescent or hoary beneath, coarsely dentate towards the tip entire towards the base 3-5 nerved. Petiole up to 6 mm. long, pubescent swollen in the upper third.

Pedicels axillary or crowded towards the ends of branches, calyx 5-angular, hairy; lobes triangular, acuminate. Corolla yellow or white 8-12 mm. across. Carpels 7-10 with 2 short awns. Seeds smooth, black⁽¹⁰⁸⁾. This plant distributed throughout the country especially in moist regions, ascending to an altitude of 1800 m in the Himalayas⁽¹⁰⁹⁾.

Mahabala ghruta is one of the formulation to treat the urinary, seminal and gynaecological disorders and to help conception⁽¹¹⁰⁾. Sukraksaya, Ksata, Ksaya, Visamajvara, Daurbalya, Vatavyadhi, Vatarakta, Raktapitta, Sopha⁽¹¹¹⁾.

Mahabala is one of the formulation in *Maha Visagarbha Taila*, *Navratnarajamrganka Rasa*⁽¹¹²⁾.

Nagbala

Synonyms

Akshatandula, *Arishta*, *Balahvaya*, *Balottara*, *Balya*, *Bhujangajihva*, *Gangeruki*, *Gavedhuka*, *Hrasvagavedhuka*, *Jhasha*, *Jhusha*, *Khanda*, *Kharagandhinika*, *Khirahitti*, *Lalajihva*, *Mahasamanga*, *Shitabala*, *Shitapakini*, *Shitavara*, *Udanika*, *Visvadeva*, *Vruddhibala*, *Vruksharuha*⁽¹¹³⁻¹¹⁶⁾.

Nagbala is a perennial much-branched herb; branches prostrate or trailing, sometimes rooting, more or less hairy. Leaves 1.25 cm. long, cordate, ovate, acute or acuminate, serrate, sparsely clothed with stellate hairs; petioles 1-2.2 cm. long. Pedicels 1.2-3.8 cm. long, slender, axillary, solitary or twin, jointed a little above the middle. Calyx 4 mm. long, 5-angled, hairy; lobes triangular, acute or acuminate. Corolla pale yellow, slightly exceeding the calyx. Carpels 5, smooth, not reticulated, muticous or with a small slightly 2-lipped beak, not cuspidate. Seeds brown, glabrous.

Nagbala is controversial herb. Two plants are mainly used with this name. One is *Sida Veronicaefolia* and second is *Grewia hirsuta* (*Gangeruki*).

In the Ayurveda *Nagabala* is one of the herb in treatment of *Kshaya*⁽¹¹⁷⁾, *Panatyaya*⁽¹¹⁸⁾, *Kasa*⁽¹¹⁹⁾, emaciation⁽¹²⁰⁾, *kshatakshina*⁽¹²¹⁾.

Some of the formulations *Satavaryadi ghruta*⁽¹²²⁾, *Nagabala rasayana*⁽¹²³⁾, *Brahma rasayana*⁽¹²⁴⁾, *Indrokata rasayana*⁽¹²⁵⁾, *Yashtyahvadi ghruta*⁽¹²⁶⁾, *Nagabala kalpa*⁽¹²⁷⁾, *Nagabala taila*⁽¹²⁸⁾, *Balamula rasayana*⁽¹²⁹⁾.

Antioxidant effect⁽¹³⁰⁾, hepatoprotective effects⁽¹³¹⁾ Abortifacient⁽¹³²⁾ properties of an extract from *Sida veronicaefolia* found in the animal study.

Therapeutic uses

1. *Bala* and *Atibala* both are taken with milk early in the morning in Slipada.
2. Decoction of *Atibala* is useful in mutrakrcha.
3. Root powder of *Atibala* is given with sugar and honey.
4. Powder of *Atibala*, *Bala* and *Devdaru* is given internally for galganda.

5. Seeds of *Atibala* is useful in impotency, piles and urinary tract infection.
6. *Caraka* mentioned *Bala* in so many diseases with different forms like⁽¹³⁴⁾.
7. In *Raktapitta*-used *Bala* root should be used with cow milk *Anupan*.
8. In bleeding piles –Milk or Ghee should be *siddha* by *Bala* and *Prishnaparni* and should be taken internally.
9. In Gout-Prepare oil with *Bala* root *Kalk* and decoction and use it internally and externally for management of gout.

Traditional Medicinal Uses

In Ayurvedic texts this is mentioned that *Bala* is *Madhura* in *Ras* and *Vipaka*, *Laghu*, *Snigdha*, *Picchila* in *Guna* and *Sita Virya*. It is *Vat Pitta* hara, *Balya*, *Brmhana* and *Vrishya Karm*⁽¹³⁵⁾. It is reputed herb for its tonic and aphrodisiac properties. The parts of plant are useful in various diseases like fever, fits, leucorrhoea, micturition, gonorrhoea colic, nervous disorders, general debility and heart irregularity.

The roots and leaves of *Sida rhombifolia* Linn. are bitter, sweet, emollient, cooling, aphrodisiac, unctuous, strengthening and promote sexual vigour and vital factor. These are good for rheumatism, flatulence, colic, haemothermia, emaciation, vitiated conditions of *Tridosha*, seminal weakness, arthritis and diarrhoea⁽¹³⁶⁾.

Phyto chemistry

Chemical constituents

Ephadrine, Hypapharine, Vasicinone, Vasicine, vasicinol, Choline, Betain Phytoosterol are mainly found in *Sida* and its species.

The following alkaloids has been found in *Sida Cordifolia* and its species B. Phentylamine, Ephadrine, Pseudo-ephadrine, S - (+) - Nb - methyltryptophan methyl ester, hypahorine, Vasicinone, Vasicinol, Choline and betaine⁽¹³⁷⁾.

Steurlic, malvalic and coronaric acids have been isolated from *Sida* seeds oil along with other fatty acids.

Hescaes, n-alkane mixtures, alkanols, B-sitosterol, Vanillic, P-coumaric, caffeic, fumaric and amino acids, alantolactone, isolantalactone are major chemical constituents in it⁽¹³⁸⁾.

Pharmacological Actions

The flowers and unripe fruits are given with sugar in burning sensation in micturition⁽¹³⁹⁾.

The root, leaf and fruits are *Kaphahara* and *Vatahar*, cures ulcers and biliousness and also useful in urinary discharge, scalding urine, leprosy and skin infections, the fruit is also astringent and cooling. Mentioned in Ayurvedic texts.

The leaves are demulcent and refrigerant and are useful in gonorrhoea, gleet and scalding urine.

The root bark decoction is used as a demulcent in irritability of the bladder and in gonorrhoea. The root is also used as a gentle tonic and diaphoretic and is employed in mild cases of debility and fever⁽¹⁴⁰⁾.

The root of the *Sida acuta* is sour and sweet, removes "*Tridosha*", digestive and diuretic, useful in fever, burning of the body and urinary discharges mentioned in Ayurveda. The root is cooling, astringent, tonic and useful in nervous and urinary diseases and in blood and bile disorders.

It can be used with ginger in intermittent fever. This is considered by the Hindoo practitioners as a valuable stomachic and useful remedy of chronic bowel complaints.

In the gold cast the plant is used to cure venereal diseases⁽¹⁴¹⁾.

The root and leaves of *Sida rhombifolia* are sweetish, aphrodisiac, tonic, tridosahar best for urinary complaints, discharges and strangury, useful in fever, heart diseases, burning sensations, piles and inflammation.

The roots of its herb is a good treatment of rheumatism. In Assam the roots are taken internally to control childbirth and it is also tied round the abdomen for same purpose.

It is also used as a valuable remedy in pulmonary tuberculosis and rheumatism in Europe.

Sida cordifolia is slightly bitter and sweet, tonic, astringent, emollient, aphrodisiac, *Vataghan* and *Pittaghan*. The bark cures urinary troubles and discharges. Its fruits are acrid and sweet, digestive, cooling, astringent, aphrodisiac, remove *Pitta* and cough, increases *Vata*, useful in blood disorders, bleeding piles, throat disease, phthisis and insanity. It is mentioned in *Ayurveda* texts.

Hindu physicians used root decoction with ginger in intermittent fever and also used in fever accompanied with shivering fits and strong heat of the body.

The root bark is used with sesamum oil and milk is very efficacious in curing cases of facial paralysis and sciatica when caused by the inflammation of the nervous concerned⁽¹⁴²⁾.

1-Crude extract of *Sida rhombifolia* produced sedative effect and significant potentiation of phenobarbitone sleeping time in mice. Extract did not produce any change in normal temperature of mice but 10 gm /kg dose showed significant decrease in rectal temperature of pyretic rats 2 and 3 hours after administration⁽¹⁴³⁾.

2-In an experimental study on the *Rasayana* drugs viz. *Bala*, *Atibala*, *Mahabala* & *Bhumibala* have been screened for their immune –enhancing properties. Animals of drugs treated of group showed statistically an enhanced production of anti *S.typhi* o

antibodies. *Abutilon indicum* (*Atibala*) was the best drug in augmenting antibody production (Dixit 1978).

CONCLUSION

From the above it can be concluded that the drug *Bala* (*Sida Cordifolia* and its species) proved to have extensive medicinal value in the treatment of diseases like fever, urinary system, abdominal, Neurological disorder etc.

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