

Ethnomedicinal practice of *Tinospora cordifolia* (Willd.) Meirs ex Hook f. & Thoms. by the traditional medicine practitioners at Savar, Dhaka

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In Bangladesh, inexpensiveness and easy accessibility have made traditional medicine an integral part of public health service (Ahmed *et al.*, 2009, Rahman *et al.*, 2012). Among the vast library of important medicinal plants, *Tinospora cordifolia* (Willd.) Miers ex Hook f. & Thoms. belonging to the family Menispermaceae is immensely valuable in terms of chemical constituent and pharmacology (Srivastava, 2011). *T. cordifolia* (Gulantha) is a large deciduous, extensively spreading and climbing shrub with a number of coiling branches. It is indigenous to areas of Bangladesh, India, Myanmar, Sri Lanka, China, Thailand, Philippines, Indonesia, Malaysia, Borneo, Vietnam and North-West-South Africa (Pendse *et al.*, 1981 and Jain *et al.*, 2010). In the traditional medicine system, whole plant of *T. cordifolia* is used to treat gout and ulcer, jaundice, rheumatism, skin diseases and as a stimulator of bile secretion, diuretic, blood enhancer (Choudhary *et al.*, 2013). This plant is used as vermifuge, antipyretic, antimalarial, for washing sore eyes, syphilitic sores, chronic diarrhea and dysentery (Khory & Katrak, 1981). Ayurveda advocates the use of *T. cordifolia* stem as rejuvenator and routinely prescribed to treat fever, jaundice, diabetes, chronic diarrhoea, urinary diseases and dyspepsia (Singh *et al.*, 2003). Bishayi (2002) reported the immunomodulatory and antioxidant potential of *T. cordifolia*. *T. cordifolia* grows almost everywhere in Bangladesh (Choudhury *et al.*, 2013). Uddin & Hassan (2014) reported the internal application of stem juice as an antianthelmintic from Kalenga forest of Bangladesh.

Savar is an Upazila of Dhaka District, located (23°45'N-24°0'N and 90°14'E-90°27'E) at a distance of about 24 kilometers to the northwest of Dhaka city. The religious breakdown of the local inhabitant of Savar Upazila was 93.86% Muslim, 5.35% Hindu, 0.20% Buddhist, 0.58% Christian and 0.03% ethnic minority group (BBS, 2013). However, from the rowdy observation the presence of *T. cordifolia* in Savar Upazilla seems to be on the verge of disappearance which provoked to study the medicinal use of this plant in this area. Considering the above facts a semi-structured survey on *T. cordifolia* was conducted in Savar Upazila.

Ethnomedicinal survey and data collection: In the present study, the survey was carried out at eight selected areas namely, Savar bazar, Nama bazar, Kuturia, Islamnagar, Rangamati (Bismail), Nobinagar, Zirani and Noyarhat of Savar upazila based on density and diversity of local inhabitant.

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The ethnomedicinal survey was carried out on the registered Ayurvedic or Unani doctors, kavirajes and street canvassers accessible at the above mentioned areas under eight different field trips during the year 2012-2013. Data for this study were collected by the researchers themselves using semi-structured questionnaire following the suggested methodology of Martin (2008). Semi structured questionnaire was preferred as it offered both qualitative and quantitative information. Among the three categories of traditional medicine practitioners of the studied area five registered doctors, six kavirajes and six street canvassers were interviewed. Samples of *T. cordifolia* (guloncho) as pointed out by the traditional practitioner were collected in different pouches and finally the plant specimens were identified and authenticated by the Bangladesh National Herbarium (DACB), Mirpur, Dhaka, Bangladesh. The voucher specimen (accession no- DACB-39195) has been deposited in DACB for further reference.

The collected information on ethnomedicinal use of *T. cordifolia* at different sites of Savar area have been presented in Table 1.

Table 1. Ethnobotanical information of *T. cordifolia* obtained from three different categories of traditional medicine practitioners at various areas of Savar Upazila

Site	Name and age (years) of informants	Profession (practicing year)	Used plant part	Uses
Savar bazar	Dabir Miah (57)	RD (6-7)	Leaf juice	To treat burning sensation.
	Md. Sujon Miah (27)	SC (2-3)	Stem paste	To treat fever
Nama bazar	Alongir Moti (47)	RD (10-11)	Full plant paste	In the treatment of cough
	Mamun Hossain (40)	RD (7-8)	Stem paste	Treatment of eczema
	Md Ali (52)	K (22)	Stem decoction	Treatment of fever
	Khabiruddin (60)	K (35)	Dried fruit powder	Taken with ghee or honey as tonic
Kuturia	Amrito Kumar Sarkar (35)	RD (5-6)	Stem paste	To treat various skin diseases
	Md Shafiqullah (62)	SC (27)	Old stem decoction	To treat periodic fever
Islamnagar	Md Abdul Malek(37)	K (17)	Warm juice of root	To treat fever
	Md Selim Sarkar (35)	SC (5-6)	Root paste	To treat leprosy
Rangamati, Bismail	Abdul Mannan(43)	K (20)	Root and stem	Antidote to scorpion bite
Nobinagar	Md Amzad Ali (47)	SC (12-14)	Stem juice	Orally taken with honey to treat asthma.
	Md Robbin (55)	SC (25)	Root decoction	To treat dysentery
Zirani	Sabur Miah (45)	RD (5-6)	Stem and root powder.	Taken with milk to treat cancer
	Md Khurshed Miah (40)	K (20)	Stem paste	Treatment of Leucorrhoea
Noarhat	Abdus Salam (55)	K (27)	Leaf juice	2-3 drops put in the ear to treat pain in ear
	Md Hatem Ali (32)	SC (10)	Stem juice	To treat various skin diseases

Note: K= kaviraj, RD= registered doctor, SC= street canvasser

Table 2. List of different plant parts mixed with *Tinospora cordifolia* and their formulation based on the information obtained from three categories of traditional medicine practitioners at various areas of Savar Upazila

Name of the informant and profession	Associated plant with <i>T. cordifolia</i>		Family	Used part and amount	Formulation and use
	Scientific name	Common name			
Dr. Amrito Kumar Sarkar Registered doctor	<i>Azadirachta indica</i>	Neem	Meliaceae	Bark (100g)	All the ingredients are powdered, mixed with 100g powder of <i>T. cordifolia</i> stem and 25g K ₂ CO ₃ . This formulation is called neembadi powder and used to treat various skin diseases.
	<i>Terminalia chebula</i>	Horitoki	Combretaceae	Fruit (100g)	
	<i>Terminalia bellerica</i>	Bohera	Combretaceae	Fruit (100g)	
	<i>Phyllanthus emblica</i>	Amlaki	Euphorbiaceae	Fruit (100g)	
	<i>Zingiber officinalis</i>	Ada	Zingiberaceae	Rhizome (250g)	
	<i>Piper longum</i>	Pipul	Piperaceae	Seed (25g)	
	<i>Trachyspermum ammi</i>	Jyno	Apiaceae	Seed (25g)	
	<i>Emblica ribes</i>	Birango	Primulaceae	Seed (25g)	
	<i>Berberis aristata</i>	Daru horidra	Berberidaceae	Seed (25g)	
Dr. Alomgir Moti Registered doctor	<i>Cyperus rotundus</i>	Mutha	Cyperaceae	Seed (25g)	<i>Terminalia chebula</i> (Horitoki), <i>Trachyspermum ammi</i> (Jyno) powder is mixed with <i>T. cordifolia</i> in equal quantity to make 50 ml mixture. Mixture with salt orally taken to treat cough.
	<i>Cedrus deodara</i>	Devdaru	Pinaceae	Seed (25g)	
Dr. Mamun Hossain Registered doctor	<i>Terminalia chebula</i>	Horitoki	Combretaceae	Fruit	All elements are powdered and mixed with 5g powder of <i>T. cordifolia</i> stem. Used to treat eczema.
	<i>Trachyspermum ammi</i>	Jyno	Apiaceae	Seed	
Dr. Dabir Miah Registered doctor	<i>Cassia tora</i>	Chakundi	Fabaceae	Seed (20g)	Seed powder mixed with leave paste of <i>T. cordifolia</i> . Applied to treat burning sensation.
	<i>Pongamia pinnata</i>	Karanja	Fabaceae	Seed (20g)	
Md. Khurshed Miah Kaviraj	<i>Brassica campestris</i>	Salghum	Brassicaceae	Seed	Seed powder mixed with leave paste of <i>T. cordifolia</i> . Applied to treat burning sensation.
Md. Sujon Miah Street canvasser	<i>Piper nigrum</i>	Gol morich	Piperaceae	Seed	Paste of <i>T. cordifolia</i> stem and five seeds of <i>Piper nigrum</i> (Gol morich), used to treat Leucorrhoea.
Md. Hatem Ali Street canvasser	<i>Solanum surattense</i>	Titbegun	Solanaceae	Root	Pills made from mixture of <i>T. cordifolia</i> stem paste and titbegun root paste. Taken orally to treat fever.
Md. Hatem Ali Street canvasser	<i>Azadirachta indica</i>	Neem	Meliaceae	Leaf	Paste of stem of <i>T. cordifolia</i> , <i>Azadirachta indica</i> (Neem) and <i>Curcuma longa</i> (Halud), used to treat various skin diseases.
	<i>Curcuma longa</i>	Halud	Zingiberaceae	Rhizome	

In the present investigation, *T. cordifolia* was mainly found to be used in burning sensation and in the treatment of cough, eczema, fever, various skin diseases, leprosy, dysentery, leucorrhoea and pain in ear in the studied area. One Kaviraj (Abdul Mannan) who has been practicing for 20 years reported the use of root and stem of this plant as an antidote to snake and scorpion bite but he did not reveal the way of application.

From the present survey, it was found that stem of *T. cordifolia* was the commonly used part by the three categories of practitioners. From the interview of 17 informants under these practitioners, stem showed the highest percentage of use (47.06%) followed by root (17.64%), leaves (11.76%), combination of root and stem (11.76%), fruits (5.88%) and whole plant (5.88%). Some other plants of different families, frequently used along with *T. cordifolia* and their formulation used by the practitioners to cure various ailments of human diseases (skin disease, fever, cancer, leprosy, ear pain, snake bite, dysentery, diarrhoea, leucorrhoea, burning sensation, asthma and cough) were also recorded (Table 2).

In the present investigation, registered Ayurvedic doctors in the studied area were found to use stem, leaf, whole plant and the combination of root and stem to treat various ailments while street canvassers used only stem and root for therapeutic purpose (Table 2). On the contrary, kavirajes were found to use different parts of the plant except stem. Scientific studies of Kumar *et al.* (2000) and Singh *et al.* (2003) also validated the use of *T. cordifolia* in traditional medicine. It can be concluded that ethnomedicinal use of *T. cordifolia* in Savar Upazila cannot be neglected rather importance should be given to the extensive scientific studies towards discovery of newer formulation to treat diseases.

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