



Asian Journal of Pharmacognosy

Ethnopharmacological Note

***Caryota mitis* Lour. (Arecaceae) – A previously unreported plant for treatment of elevated blood glucose level in diabetic patients**

S.M. Shatil Shahriar¹, Be-nazir Farzana², Mohammed Rahmatullah^{1*}

¹Department of Pharmacy, University of Development Alternative, Lalmatia, Dhaka-1207, Bangladesh

²Department of Biotechnology & Genetic Engineering, University of Development Alternative, Lalmatia, Dhaka-1207, Bangladesh

*Mohammed Rahmatullah: rahamatm@hotmail.com

Abstract

Caryota mitis Lour. (Arecaceae), also known as fishtail palm in English and palm in Bangladesh can be found in the tropical forests of south-east Asian countries. The synonyms of this palm species are *Caryota furfuracea* Blume ex Mart., *Caryota griffithii* Becc. *Caryota griffithii* var. *selebica* Becc., *Caryota nana* Linden, *Caryota propinqua* Blume ex Mart., *Caryota sobolifera* Wall. ex Mart., *Caryota speciosa* Linden, *Drymophloeus zippellii* Hassk., and *Thuessinkia speciosa* Korth. The palm is occasionally planted by the roadsides as an ornamental species. The roots and fruits of this palm species have been reported to be used by folk medicinal practitioners of two villages by the Rupsha River in Bagerhat district, Bangladesh for treatment of constipation, hemorrhoids, loss of virility, and rheumatoid arthritis (Mollik et al., 2010). Apart from this one report, there does not seem to be other reports on the ethnomedicinal uses of this *Caryota* species from either Bangladesh or any other part of the world. However, a number of reports are present on traditional medicinal uses of another *Caryota* species, like *Caryota urens* L. The Kani tribals in Kouthalai of Tirunelveli Hills, Tamil Nadu, India, orally take paste of young plant stem along with fruits of *Phyllanthus emblica* L. and rhizomes of *Curculigo orchinoides* Gaertn. to strengthen the body (Ayyanar and Ignacimuthu, 2005). Three glasses of toddy (palm juice) are orally taken daily to restore loss of appetite by the Kondareddi tribals of Khammam District, Andhra Pradesh, India (Reddy et al., 2008). The prevalence of diabetes mellitus (a disorder characterized by elevated blood glucose levels) is increasing in Bangladesh; a quite recent study suggests that 7.4% of the population is suffering from this disorder (Biswas et al., 2016). Diabetes can quickly lead to other complicating diseases like diabetic retinopathy, neuropathy, and nephropathy (Khanam et al., 2017); a study of diabetic patients of Bangladesh has reported prevalence of hypertriglyceridemia, increased LDL, decreased HDL, diabetic foot ulcer, hypertension, and coronary heart disease (Selim, 2017). Diabetes mellitus has no total cure; it has been observed in Bangladesh that the average cost of diabetic patients for annual care is US\$ 635 (Islam et al., 2017a); to be noted that as per recent statistics, about a third of Bangladesh population lives below the poverty level income of US\$ 2 per day. Not surprisingly, around 10% of diabetic patients do not take any diabetic medications (Islam et al., 2017a); in fact it has been found that knowledge on diabetes medication, their appropriate



use and side effects was rather poor even in urban areas (Islam et al., 2017b). Towards discovery of more available and affordable anti-diabetic drugs, we had been screening medicinal plants of Bangladesh for their antihyperglycemic efficacies through oral glucose tolerance tests (Rahmatullah et al., 2010; Ahmed et al., 2011; Rahman et al., 2011; Shahreen et al., 2012; Rahmatullah et al., 2013; Ahmed et al., 2015; Hasan et al., 2015). These plants, in turn, are selected from ethnomedicinal surveys conducted throughout Bangladesh. During one such survey in Habiganj district, it was observed that a folk medicinal practitioner was using leaves of *Caryota mitis* Lour. (Figure 1) to control blood glucose levels in diabetic patients. The plant was identified at the Bangladesh National Herbarium and was given an Accession Number of 43731. In the treatment method of the FMP, juice obtained from crushed leaves were mixed with honey and advised to be taken orally till blood glucose came under control that is reached normal levels. The treatment would then be discontinued till glucose levels went on the rise again. The FMP advised his diabetic patients to have their blood glucose checked in diagnostic clinics or to be on the alert for some symptoms of diabetes like frequent urination with sweet smell of urine. The FMP mentioned that the treatment does not have any adverse effects. Although *Caryota mitis* Lour. has not been studied as to its any anti-diabetic effects, fruits of *Caryota urens* L. reportedly possess antioxidative properties (Uddin et al., 2015), which can be beneficial during diabetes. It is possible that *Caryota mitis* Lour. may also be rich in antioxidants.

Keywords: *Caryota mitis*; diabetes

Declaration of conflict of interest

No conflict of interest associated with this work.

References

- Ahmed F, Rahman S, Ahmed N, Hossain M, Biswas A, Sarkar S, Banna H, Khatun MA, Chowdhury MH, Rahmatullah M (2011) Evaluation of *Neolamarckia cadamba* (Roxb.) Bosser leaf extract on glucose tolerance in glucose-induced hyperglycemic mice. Afr. J. Trad. Complement. Altern. Med. 8(1): 79-81.
- Ahmed M, Trisha UK, Shaha SR, Dey AK, Rahmatullah M (2015) An initial report on the antihyperglycemic and antinociceptive potential of *Lablab purpureus* beans. World J. Pharm. Pharmaceut. Sci. 4(10): 95-105.
- Ayyanar M., Ignacimuthu S (2005) Traditional knowledge of Kani tribals in Kouthalai of Tirunelveli hills, Tamil Nadu, India. J. Ethnopharmacol. 102(2): 246-255.
- Biswas T, Islam A, Rawal LB, Islam SM (2016) Increasing prevalence of diabetes in Bangladesh: a scoping review. Public Health. 138: 4-11.
- Hasan MY, Al-Mahamud R, Rahman S, Ahmad I, Rahmatullah M (2015) A preliminary report on antihyperglycemic and analgesic properties of methanol extract of *Brassica oleracea* L. var. *italica* sprouts. World J. Pharm. Pharmaceut. Sci. 4(9): 225-234.
- Islam SMS, Lechner A, Ferrari U, Laxy M, Seissler J, Brown J, Niessen LW, Holle R (2017a) Healthcare use and expenditure for diabetes in Bangladesh. BMJ Glob Health. 2(1): e000033.
- Islam SM, Biswas T, Bhuiyan FA, Mustafa K, Islam A (2017b) Patients' perspective of disease and medication adherence for type 2 diabetes in an urban area in Bangladesh: a qualitative study. BMC Res. Notes. 10(1): 131.
- Khanam PA, Hoque S, Begum T, Habib SH, Latif ZA (2017) Microvascular complications and their associated risk factors in type 2 diabetes mellitus. Diabetes Metab. Syndr. pii: S1871-4021(17)30074-7.



Asian Journal of Pharmacognosy (2017) 1(4):47-50

Mollik MAH, Hassan AI, Paul TK, Sintaha M, Khaleque HN, Noor FA, Nahar A, Seraj S, Jahan R, Chowdhury MH, Rahmatullah M (2010) A survey of medicinal plant usage by folk medicinal practitioners in two villages by the Rupsha River in Bagerhat District, Bangladesh. *Am.-Eur. J. Sustain. Agric.* 4(3): 349-356.

Rahman M, Hasan N, Das AK, Hossain T, Jahan R, Khatun A, Rahmatullah M (2011) Effect of *Delonix regia* leaf extract on glucose tolerance in glucose-induced hyperglycemic mice. *Afr. J. Tradit. Complement. Altern. Med.* 8(1): 34-36.

Rahmatullah M, Sultan S, Toma TT, Lucky SS, Chowdhury MH, Haque WM, Annay MEA, Jahan R (2010) Effect of *Cuscuta reflexa* stem and *Calotropis procera* leaf extracts on glucose tolerance in glucose-induced hyperglycemic rats and mice. *Afr. J. Trad. Complement. Altern. Med.* 7(2): 109-112.

Rahmatullah M, Hosain M, Rahman S, Rahman S, Akter M, Rahman F, Rehana F, Munmun M, Kalpana MA (2013) Antihyperglycaemic and antinociceptive activity evaluation of methanolic extract of whole plant of *Amaranthus tricolour* L. (Amaranthaceae). *Afr. J. Trad. Complement. Altern. Med.* 10(5): 408-411.

Reddy KN, Reddy CS, Raju VS (2008) Ethnomedicinal observations among the Kondareddis of Khammam District, Andhra Pradesh, India. *Ethnobot. Leaflets.* 12: 916-926.

Selim S (2017) Frequency and pattern of chronic complications of diabetes and their association with glycemic control. *Diabetes Metab. Syndr. pii: S1871-4021(16)30298-3.*

Shahreen S, Banik J, Hafiz A, Rahman S, Zaman AT, Shoyeb MA, Chowdhury MH, Rahmatullah M (2012) Antihyperglycemic activities of leaves of three edible fruit plants (*Averrhoa carambola*, *Ficus hispida* and *Syzygium samarangense*) of Bangladesh. *Afr. J. Trad. Complement. Altern. Med.* 9(2): 287-291.

Uddin MS, Hasan MF, Mamun AA, Hossain MS, Islam MT, Asaduzzaman M (2015) *In vitro* estimation of antioxidant activity of *Caryota urens* fruits. *Indo Amer. J. Pharmaceut. Sci.* 2(11): 1486-1490.



Figure 1. *Caryota mitis*