

**Screening of phyto-constituents of West Bengal Amla (*Phyllanthus emblica* L.) :
A Comparative enumeration**

Chandan Kumar Acharya

Department of Botany, Bajkul Milani Mahavidyalaya, Purba Medinipur, West Bengal, India.

Author's E-mail: cacharya28@gmail.com

Abstract

The phyto-constituents present in fruit of *Phyllanthus emblica* L. (Phyllanthaceae) consumed by the tribal people of West Bengal for the treatment of various disease ailments. *Phyllanthus emblica* L., a deciduous tree of small to medium size up to 5.5 meters representing a large group of phyto-chemical reservoir of medicinal uses in different disease like diabetes, liver disorder, snake venom neutralizer, diarrhoea, indigestion, anti-tumor, anti-carcinogenic, anti-ulcer, antioxidant, anti-inflammatory activities etc. supporting its ethnicity for the traditional healers. Quantitative estimation of various bioactive constituents reveals the presence of tannins, carbohydrates, acidic compounds, poly phenols, vitamin C, etc. in different proportions. Hence the present investigation was conducted to compare the phyto-constituents of Amla collected from two different regions of West Bengal (one at low land and other at relatively high altitude). The investigation reveals the presence of larger ascorbic acid content West Midnapore region than North Bengal, whereas tannin content is higher in North Bengal. Total poly-phenolic compounds are higher in Jhargram region than that of North Bengal. Hence it can be concluded that climatic and soil composition differences can also play a major role in quantitative changes in phytoconstituents.

Keywords: Ethnicity, *Phyllanthus emblica* L., Phyto-constituents.

Introduction

The fruit or fruit pulp of *Phyllanthus emblica* L. is a reputed drug of Ayurvedic, Unani, Siddha and Homoeopathic systems of medicine and is believed to increase defense against diseases (Sachan et al., 2013). The fruit primarily contains tannins, alkaloids, phenolic compounds, amino acids, carbohydrates,

vitamin C and other compounds especially the essential nutrients (Sachan et al., 2013). Fresh or dried fruit is one of the important herbal drugs used traditionally both as a medicine and as a tonic to build up lost vitality and vigor (Krishnaveni and Mirunalini, 2010). In Unani medicine, it is described as a tonic for heart and brain. According to the

two main classic texts on Ayurved, Charak Samhita and Sushrut Samhita, Amalaki is regarded as 'the best among rejuvenate herbs', 'useful in relieving cough and skin disease' and 'the best among the sour fruits' (Patel and Goyal, 2012). Amla is acrid, cooling, refrigerant, diuretic and laxative. Dried fruit is useful in hemorrhage, diabetes (Mehta et al. 2009), ulcer (Sairam et al., 2002), diarrhoea (Nadkarni, 1999 and Singh et al., 2011), liver disorder (Bhattacharya et al., 2000), snake venom neutralizer (Alam and Gomes, 2003), reducing cholesterol (Anila, and Vijayalakshmi, 2002), fevers (Nadkarni and Nadkarni, 1999) and also for cancer (Sancheti et al., 2005). Some of the herbal formulations adheres to scientific methodology and has been generated based on reasonably sound data whereas most of them are prepared by unregistered manufacturers without license and do not follow the Good Manufacturing Practice (GMP) or Indian System of Medicines (ISM) standards (Bigoniya, 2013). As *Phyllanthus emblica* L. is a natural product, our society believes that the fruit is safer than conventional pharmaceuticals (Bigoniya, 2013) irrespective of their proper doses and proper application. So, it is urgent to validate phyto-constituents scientifically in terms of its efficacy and safety.

Materials and Methods

Collection of plant material

Fruits were collected from the north Bengal hill slope and Jhargram Binpur Region, West Bengal, respectively in the month of January, 2016. Fresh *Phyllanthus* flesh was washed with tap water air dried for a week in room temperature ($26 \pm 2^{\circ}\text{C}$) and then grounded in

an electrical grinder, stored and kept for further use.

Results and Discussion

The grinded dust of fruits of *Phyllanthus emblica* L. that were collected were analyzed for various routine phytochemical parameters. Preliminary results obtained showed the presence of certain phytochemicals in the grounded fruit which is represented in the table 1 and 2 respectively. Phytochemical parameters showed presence of carbohydrate, tannins and ascorbic acid content

The present study reveals that total ash content is 0.40g/100g in Jhargram region as compared to only 0.22g/100g in North Bengal. Moisture content also varied significantly i.e., 78.71g/100g in Jhargram region as compared to 82.59g/100g in North Bengal. A similar trend was also noticed in total polyphenol content i.e., 17.68g/100g obtained from Jhargram region as compared to 14.99g/100g from North Bengal region. Total carbohydrate content also varied largely i.e., 20.21 g/100g in Jhargram and 16.54g/100g in Jhargram and North Bengal respectively. Tannin content on the other hand was lower (16.24g/100g) in Jhargram than North Bengal (23.68g/100g). Vitamin C content is higher in Jhargram (194.44 mg/100g) than that of North Bengal (177.67 mg/100g).

Conclusion

From the above findings it may be concluded that the soil composition, rainfall and temperature also plays an important role in concentration differences of fruit phyto-constituents. These concentration differences

in fruit of same species of a plant but at different regions might have some adverse

impact on nutritional status as well as disease healing property. We would encourage other

Table 1. Phyto-chemical screening for the presence of different phyto-constituents in *Phyllanthus emblica* L. fruit extracts (Jhargram region).

Sl. No.	Testing parameters	Test method	RESULT	UNIT
1.	Foreign matter	AOAC/DGHS	NF	G/100G
2.	Insect infection	VISUAL	NF	G/100G
3.	Total Ash content	AOAC 941.12	0.40	G/100G
4.	Acid insoluble ash	AOAC 941.12	0.03	G/100G
5.	Moisture content	AOAC 931.04	78.71	G/100G
6.	Total polyphenol	ISO 14502 (PART -1): 2005	17.68	G/100G
7.	Total Carbohydrate	BY DIFFERENCE (REF. AOAC 986.25)	20.21	G/100G
8.	Tannin Content	GEN /SOP/ CALLAB-02	16.24	G/100G
9.	Vitamin C (Ascorbic acid)	AOAC 967.21	194.44	MG/100G

Table 2. Phyto-chemical screening for the presence of different phyto-constituents in *Phyllanthus emblica* L. fruit extracts (North Bengal region).

Sl. No.	Testing parameters	Test method	RESULT	UNIT
1.	Foreign matter	AOAC/DGHS	NF	G/100G
2.	Insect infection	VISUAL	NF	G/100G
3.	Total Ash content	AOAC 941.12	0.22	G/100G
4.	Acid insoluble ash	AOAC 941.12	0.02	G/100G
5.	Moisture content	AOAC 931.04	82.59	G/100G
6.	Total polyphenol	ISO 14502 (PART -1): 2005	14.99	G/100G
7.	Total Carbohydrate	BY DIFFERENCE (REF. AOAC 986.25)	16.54	G/100G
8.	Tannin Content	GEN /SOP/ CALLAB-02	23.68	G/100G
9.	Vitamin C (Ascorbic acid)	AOAC 967.21	177.67	MG/100G

investigators to confirm or refute our findings.

Acknowledgement

Grateful acknowledgements are made to U.G.C. for providing financial assistance (Ref.: PSW- 206/13-14, UGC-ERO).

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