Hepatoprotective, anticancer & antiviral effects of Bhui Amla in unani medicine: an overview

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Abstract
Bhui amla is commonly known as “bhumi amla” which belongs to Euphorbiaceae family. In Unani literature it is described in the name of “BHUTI” which means Bhum Amlak (Amla of land). There are many chemical constituents reported in bhui amla, but major chemical constituents are mainly alkaloids, in the form of lignins, like phyllanthin and hypophyllanthin. Globally it is used as a home remedies to treat different disorders viz; Hepatitis-B, Jaundice, Cirrhosis of liver, intestinal infection, diabetes, chronic fever, loss of appetite etc. Owing to its hepatoprotective property, it is in great demand in the market. There are many formulations available in the market for the cure of different ailments.

Keywords: Bhui Amla, Bhuti, Bhum Amlak, Hepatoprotective, Unani Medicine.

1. Introduction
Bhui amla is an annual herb mainly growing in rainy season. The plant is found to grow sufficiently in many parts of country like Bihar, Uttar Pradesh, Tamil Nadu, Maharashtra, Punjab and Sikkim as a weed. It can be survives under tropical and high rainfall conditions and tolerates temporary water logging [1].

Bhui amla is an important hepatoprotective remedy being used since time immemorial. The hepatoprotective activity has been reported from phyllanthin and hypophyllanthin present in *P. amarus*. Although it is highly valuable as hepatoprotective agent, it suffers from the dilemma of short supply due to its low herbage, availability in limited period and stringent requirement of climatic situation [2,3].

2. Plant Catalog
Family: Euphorbiaceae
English name: Country gooseberry
Indian name
Bhuti, Bhum Amlak (Unani), Bhuamlaki, Bahupatri (Sanskrit), Jangliamli, Hazardana, Jaramala (Hindi), Keela nelli (Tamil), Nela usirika (Telugu), Nela Nelli, Kiranelli (Kannada), Bhonya amli, Annali (Gujarathi), Bhuivali (Marathi), Bhuiamla (Bengali), Kizaneli (Malayalam).

Species
*Phyllanthus Amarus* Schum & Thonn (*Phyllanthus niruri* auct. Non L.), *Phyllanthus fraternus* Webster [1,4].

3. Images of Bhui Amla
6. Action (Af’al)

7. Pharmacological Activity
7.1 Hepatoprotective activity
It is reported that aqueous extract of *P. amarus* shows hepatoprotective effect on ethanol-induced rat hepatic injury [13]. Another study revealed that aqueous extract of bhui amla at the dose of 50 or 100 mg/kg body weight for duration of 7 days against nime sulide induced hepatic damage showed hepatoprotective effect [14]. The methanolic and aqueous extracts of bhui amla seeds at the dose of 250 mg/kg body weight showed protective effect, *in vitro* and *in vivo* models of against CCl₄ mediated liver injury [15]. One another study reported that *P. amarus* aqueous extract against ethanol induced hepatotoxicity in rats both in *in vitro* and in vivo exhibit hepatoprotective activity, possible mechanism may involve their antioxidant activity [16].

7.2 Anticancer activity
One study revealed that aqueous extract of of *Phyllanthus Amarus* treatment exhibited potent anticarcinogenic activity against 20-methylcholanthrene induced sarcoma development and increased the survival of tumour harboring mice, antitumour and anticancer activity may be related with the inhibition of metabolic activation of carcinogen as well as the inhibition of cell cycle regulators and DNA repair [17]. It is reported that a mixture (1:1) of phyllanthin and hypophyllanthin isolated from *P. amarus* exhibited antitumor activities against Ehrlich Ascites Carcinoma in Swiss albino mice at a dose of 25mg/kg, 50 mg/kg, and 100mg/kg body weight [18]. It is documented that *P. amarus* protects the liver from hepatocarcinogenesis and the root extract of *P. acuminatus* exerts growth inhibition in murine P-388 lymphocytic leukemia and B-16 melanoma cell lines [19]. Another study declared that methanolic and aqueous extracts of *Phyllanthus* showed anti-metastatic effects on human lung (A549) and breast (MCF-7) cancer cell lines [20]. One another study revealed that flavonoids isolated from *Aloe vera*, *Mimosa pudica* and *Phyllanthus niruri* showed cytotoxicity activity against human breast carcinoma cell line (MCF-7) and the inhibitory concentration at 50% growth (IC50) was found to be, *Mimosa pudica* (IC50= 35.52±0.50 µg/ml), *Aloe vera* (IC50= 54.97±0.36µg/ml) and *Phyllanthus niruri* (IC50= 84.88±0.87 µg/ml) [21].

7.3 Antiviral effect
It is reported that an aqueous extract of the plant bhui amla inhibits endogenous DNA polymerase of hepatitis B virus and binds to the surface antigen of hepatitis B virus *in vitro* [22]. Another study regarding bhui amla exhibit antiviral activity against HIV [23]. It is documented that aqueous and methanolic extracts of bhui amla showed antiviral effect against dengue virus [24]. Bhui amla reveal the powerful antiviral activity against Herpes Simplex Virus type-1 and Herpes Simplex Virus type-2 which is anticipated to its action in the early stage of infection and replication [25].

8. Conclusion
Bhui Amla is an excellent medicinal herb which is broadly used in tropical countries including India. They have various
pharmacological activities such as hepatoprotective, anticancer, antiviral, anti-diabetic, nephroprotective, anti-
inflammatory, antimicrobial etc. This effective diverse herb particularly hepatoprotective, used therapeutically by the
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