



RESEARCH ARTICLE

EXPLORATION OF GUM IN ANGIOSPERM PLANTS IN PURVANCHAL DISTRICTS OF EASTERN UTTAR PRADESH

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ABSTRACT

The present study reveals that total no. of 36 species belonging 33 genera are gum yielding plants. In which there are 27 species and 11 families gum production by stem, 7 species and 4 families by seed and 2 families and 1 species by fruit. The belonging families are Anacardiaceae, Bixaceae, Boraginaceae, Burseraceae, Combretaceae, Dipterocarpaceae, Fabaceae, Linaceae, Malvaceae, Meliaceae, Moraceae, Moringaceae, Myrtaceae, Plantaginaceae and Rutaceae. There are many dominantly occurred species as *Acacia nilotica*, *Aegle marmelos*, *Azadirachta indica*, *Bombax ceiba*, *Cordia dichotoma*, *Eucalyptus obliqua*, *Mangifera indica*, *Moringa oleifera*, *Tamarindus indica* and *Terminalia arjuna*.

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INTRODUCTION

Present study based on field survey of Purvanchal districts of Uttar Pradesh. This region of Eastern Uttar Pradesh is located between 23°45'N-28°30'N latitude and 81°45'E-84°30'E longitude in India and 100-500 m above mean sea level. The state covers a geographical area of 85,845 sq km. The climate of the state is tropical monsoon with annual rainfall varying between 600-2000 mm. The average maximum and minimum temperatures are 48°C and 2°C respectively. It covers the districts Azamgarh, Ghazipur, Deoria, Basti, Ballia, Jaunpur, Kushinagar, Varanasi, Gorakhpur, Pratapgarh, Prayagraj, Bhadohi, Ayodhya, Sultanpur, Ametgi, Lucknow, and Ambedkar Nagar. This region shows very rich variety and vegetation of floras. Gum is found in greater or less degree about 44 families covering 1900 genera and 21,000 sp. (Kaur et al. 2023). It is produced or secretes by many parts of plants either stem, fruit, and seed. Majority of the gum are exuded from plants stem. Plants derived gum is good source of nutraceuticals and pharmaceuticals as well as calcium, potassium, magnesium, sodium and phosphorous (Upadhyay 2017). Gums are group of plants products formed due to gummosis process. Gum exudates from plants obtained in a liquid form as family Anacardiaceae, Combretaceae, Fabaceae, Meliaceae and Rutaceae (Goswami and Naik, 2014). Kaur et al. (2023) reported that gum is useful account as in medicinal value species such as *Azadirachta indica* (used in skin diseases like ring worm, scabies wound and ulcer), *Bombax*

ceiba and *Butea monosperma* (both used in diarrhea and dysentery) and *Mangifera indica* (applied on cracks in the skin of the feet and on scabies).

MATERIALS AND METHODS

The plants identification done by morphological, anatomical and floral characters as well as with help of floras, e-floras and herbarium. Review of literatures shows that overall studies carried out provided based on such as Oliver (1961), Tookey and Jones (1965), Tadesse et al. (2007), Farooqi (2008), Giri et al. (2008), Bhatnagar (2014), Singh et al. (2016), Khanna (2017), Yogi et al. (2018), Prasad et al. (2016b and 2019), Venkata et al. (2019), Sinha and Shukla (2020) and Shukla et al. (2024).

RESULTS AND DISCUSSION

Present study reported 36 species of gum plants are *Abelmoschus esculentus* (L.) Moench, *Albizia lebbeck* (L.) Benth., *Acacia nilotica* (L.) Willd. ex Delile, *Aegle marmelos* (L.), *Astragalus gummifer* Labill., *A. microcephalus* Willd., *Azadirachta indica* A. Juss, *Boswellia serrata* Roxb., *Butea monosperma* (Lam.) Taub., *Bauhinia variegata* (L.) Benth., *Bombax ceiba* L., *Cesalpinia pulcherrima* (L.) Sw.,

Table 1. Lists of Plant species

S.N.	Genus	Family	Source
1.	<i>Abelmoschus esculentus</i> (L.) Moench	Malvaceae	Seed
2.	<i>Albizia lebbeck</i> (L.) Benth.	Fabaceae	Stem
3.	<i>Acacia nilotica</i> (L.) Willd. ex Delile	Fabaceae	Stem
4.	<i>Aegle marmelos</i> (L.) Cor.	Rutaceae	Fruit
5.	<i>Astragalus gummifer</i> Labill.	Fabaceae	Stem
6.	<i>A. microcephalus</i> Willd.	Fabaceae	Stem
7.	<i>Azadirachta indica</i> A. Juss	Meliaceae	Stem
8.	<i>Bombax ceiba</i> L.	Malvaceae	Stem
9.	<i>Boswellia serrata</i> Roxb.	Burseraceae	Stem
10.	<i>Butea monosperma</i> (Lam.) Taub.	Fabaceae	Stem
11.	<i>Bauhinia variegata</i> (L.) Benth.	Fabaceae	Stem
12.	<i>Ceasalpinia pulcherrima</i> (L.) Sw.	Fabaceae	Seed
13.	<i>Ceratonina siliqua</i> L.	Fabaceae	Seed
14.	<i>Cochlospermum religiosum</i> (L.) Alston	Bixaceae	Stem
15.	<i>Commiphora wightii</i> (Arn.) Bhandari	Burseraceae	Stem
16.	<i>Cordia dichotoma</i> G. Forst.	Boraginaceae	Fruit
17.	<i>Cyamopsis tetragonoloba</i> (L.) Taub.	Fabaceae	Stem
18.	<i>Delonix regia</i> (Boj. ex. Hook.) Raf.	Fabaceae	Seed
19.	<i>Eucalyptus obliqua</i> L 'H'er	Myrtaceae	Stem
20.	<i>Ficus elastica</i> Roxb. ex Hornem	Moraceae	Stem
21.	<i>Hopea odorata</i> Roxb.	Dipterocarpaceae	Stem
22.	<i>Lannea coromandelica</i> (Houtt.) Merr.	Anacardiaceae	Stem
23.	<i>Leucaena leucocephala</i> (Lam.) de Wit	Fabaceae	Stem
24.	<i>Linum usitatissimum</i> L.	Linaceae	Seed
25.	<i>Mangifera indica</i> L.	Anacardiaceae	Stem
26.	<i>Moringa oleifera</i> Lam.	Moringaceae	Stem
27.	<i>Neobalanocarpus heimii</i> (King) Asht.	Dipterocarpaceae	Stem
28.	<i>Plantago ovata</i> Forssk.	Plantaginaceae	Seed
29.	<i>Prosopis cineraria</i> (L.) Druce	Fabaceae	Seed
30.	<i>Sesbania bispinosa</i> (Jaeq.) W. Wight	Fabaceae	Stem
31.	<i>Shorea robusta</i> Roth	Dipterocarpaceae	Stem
32.	<i>Sterculia urens</i> Roxb.	Malvaceae	Stem
33.	<i>Terminalia anogeissiana</i> Gere & Boat.	Combretaceae	Stem
34.	<i>T. arjuna</i> (Roxb.) wight & Arn.	Combretaceae	Stem
35.	<i>T. bellirica</i> (Gaertn.) Roxb.	Combretaceae	Stem
36.	<i>Tamarindus indica</i> L.	Fabaceae	Stem

Ceratonina siliqua L., *Cochlospermum religiosum* (L.) Alston, *Commiphora wightii* (Arn.) Bhandari, *Cordia dichotoma* G. Forst., *Cyamopsis tetragonoloba* (L.) Taub., *Delonix regia* (Boj. ex. Hook.) Raf., *Eucalyptus obliqua* L 'H'er, *Ficus elastica* Roxb. ex Hornem, *Hopea odorata* Roxb., *Lannea coromandelica* (Houtt.) Merr., *Leucaena leucocephala* (Lam.) de Wit, *Linum usitatissimum* L., *Mangifera indica* L., *Moringa oleifera* Lam., *Neobalanocarpus heimii* (King) Asht., *Plantago ovata* Forssk., *Prosopis cineraria* (L.) Druce, *Sesbania bispinosa* (Jaeq.) W. Wight, *Shorea robusta* Roth, *Sterculia urens* Roxb., *Terminalia anogeissiana* Gere and Boat., *T. arjuna* (Roxb.) wight and Arn., *T. bellirica* (Gaertn.) Roxb. and *Tamarindus indica* L. There are 27 species produced gum by stem are *Albizia lebbeck*, *Acacia nilotica*, *Astragalus gummifer*, *A. microcephalus*, *Azadirachta indica*, *Butea monosperma*, *Bauhinia variegata*, *Bombax ceiba*, *Cochlospermum religiosum*, *Commiphora wightii*, *Cyamopsis tetragonoloba*, *Eucalyptus obliqua*, *Ficus elastica*, *Hopea odorata*, *Lannea coromandelica*, *Leucaena leucocephala*, *Mangifera indica*, *Moringa oleifera*, *Neobalanocarpus heimii*, *Sesbania bispinosa*, *Shorea robusta*, *Sterculia urens*, *Terminalia anogeissiana*, *T. arjuna*, *T. bellirica* and *Tamarindus indica* while 07 sp. produced gum by seed as *Abelmoschus esculentus*, *Ceasalpinia pulcherrima*, *Ceratonina siliqua*, *Delonix regia*, *Linum usitatissimum*, *Plantago ovata* and *Prosopis cineraria* and 02 species by fruit such as *Aegle marmelos* and *Cordia dichotoma*. In 11 families gum production by stem having 02 species belonging Anacardiaceae, Burseraceae and Malvaceae while 03 species belonging Combretaceae and Dipterocarpaceae, 10 species belonging Fabaceae and rest of all families have 01 species

belongs Bixaceae, Meliaceae, Moraceae, Moringaceae and Myrtaceae, 04 Families having gum production by seed are Fabaceae have 04 species while rest of 03 families have 01 species belongs Malvaceae, Linaceae and Plantaginaceae, 02 families gum productions by fruit having 01 species belongs Rutaceae and Boraginaceae.

CONCLUSION

Gums have pharmaceutical properties which are useful for human beings as medicinally, food supplements. It is used economically in paints, dyeing material of clothes i.e. dye and printing. It helps in making glues, cosmetics and adhesive for dentures. It applied in emulsifier as preparation of beverages and foods, thickening and gelling agents in food products. Finding from present study showed that exploring of gums by complementary activities by pastoralists to supplement their income.

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