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Original Article

Phytochemical and Pharmacological Perspectives on Natural Edible Gums: A Review Bridging Traditional Medicine and Morden Therapeutics

Gupta Shalini*, Trupesh Revad, Himanshu Pandya, Hitesh Solanki

Department of Botany, Bioinformatics and Climate Change Impacts Management, Gujarat University, Ahmedabad

ABSTRACT

Natural edible gums are water-soluble or swell polysaccharides generated from plant and shrub exudates that have important applications in the food, pharmaceutical, and industrial industries. These hydrocolloids, which include Gum Arabic, Karaya, Ghatti, tragacanth and Cashew gum, are prized for their distinct qualities such as thickening, emulsifying, stabilizing, and film-forming capabilities. Their ability to bind water and generate viscous solutions even at low concentrations makes them critical for improving texture, sensory properties, and shelf life in food products. Furthermore, edible gums serve as dietary fibres and a source of critical nutrients, while their historic uses in diverse cultures emphasize their therapeutic implications. These include antibacterial, antioxidant, antimicrobial capacity, anti-cancer and anti-inflammatory properties, as well as roles in digestive health and wound healing. These gums' production and functional properties are inextricably linked to both primary and secondary plant metabolic processes, and new research and expanded their potential, including novel applications in edible coatings and nanotechnology to targeted drug delivery and environmental remediation.

Keywords: Natural edible gums, Phyto-constituents, Traditional uses, Pharmacological activity

INTRODUCTION

Natural exudates from plant and shrub stems or bark are known as wild edible gums. These gums are water-soluble or swell polysaccharides that have numerous nutritional, and medicinal, and, Industrial uses. Edible gums from the wild are necessary for human diet and have therapeutic uses. They are taken from a range of plant species, such as *Acacia*, *Sterculia*, and *Boswellia* are generally found in arid and semi-arid regions. The food industry makes extensive use of gums and their derivatives. Natural gums are Polysaccharides composed of sugars other than glucose that can raise a solution's viscosity even at lower concentrations. They are less expensive and frequently available. Chemically inert, odourless, Harmless, and biocompatible. Because they dissolve in water, these gum are also known as hydrocolloids. They supply the structural components and water that regulate the water binding properties of food's form, texture, and sensory attributes. Finally, polysaccharides are a source of nutrients and dietary fibre (Saha, A., *et al*., 2017). Particularly noteworthy are three characteristics of gums: (a) their exceptional ability to attract and retain water, resulting in viscous solution; (b) their low absorption and digestion within the body especially in the large intestine (where they serve as fibre); and (c) their ability to form films. The fil-forming property of natural gums is caused by intermolecular, interactions such as intramolecular hydrogen bonding, hydrophobic, ionic, electrostatic, and cross linking (Knudsen, K. B., *et al.*, 2001). Water soluble hydrocolloids (gums) are used for a variety of purposes, Including packaging films, coatings, texture modifiers, thickeners, gelling agents, stabilizers, and emulsifiers. Several researchers have investigated the potential use of natural gums in edible film and coating formulations to improve their properties (Kshirsagar Prachi, P., & Bhogaonkar, P. Y. 2017). Gond contains gel and mucilage-forming properties. Gond includes galacturonic acid, and rhamnose, arabinose, xylose, and glucose. Edible gum has stabilizing, thickening, water-controlling, emulsifying, and filling properties (AL-Fatimi, M.,

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2021). Gum has a long history of use, and it is one of the most important non-timber forest products for tribal and rural communities' health. Plant produce gum either naturally or when harmed by external factors. Gummosis refers to the process by which plant create gums. Gum have long been the most sought-after product in many civilization throughout the world because they are necessary commodity that people have used not only for ceremonial, aesthetic, and therapeutic purpose, but also in the arts and industry (Kshirsagar Prachi, P., & Bhogaonkar, P. Y. 2017). Gums' structure contains numerous hydrophilic moieties, including hydroxyl functional groups and other polar groups which form hydrogen bond that are essential for the formation of their films (Janjarasskul T, Krochta J. M., 2010). The use edible gums in the food industry is rapidly increasing due to their outstanding significance in providing structure to the food system while also improving sensory properties (Manzoor, M., *et al*., 2020) For example, starch is used to thicken soups and sauces, alginate is used to stabilize mayonnaise, and pectin frequently used in the production of jams and jellies due to its capacity to generate gels with the necessary for their anti-cancer, anti-inflammatory, antioxidant, and immunomodulatory qualities (Perumal, P. K., *et al*., 2023). Acacia gum's well-established anti-hypertensive properties' prevent blood pressure spikes; The prebiotic activity of Konjac glucomannan supports intestinal health, while Guar gum's high fibre content provides satiety and lowers overheating. Edible gums are being studied for use in food packaging, including Edible films and coatings, to fulfil several roles and package a variety of items. Recent applications of edible gums in the food business (Bisht, B., *et al*., 2022). Such as vegan product formulation with texture and mouthfeel similar to original products, and coating fried food for reduced oil absorption, have been effective. Researchers continue to study fresh applications for Edible Gums with altering customer needs and market trends (Lu, wei, *et al*., 2020).

1. Types of Edible Gums:

1.1. Arabic Gum:

The plant *Acacia Senegal and Acacia seyal* are the sources of gum Arabic, a palatable, dried exudate. The names gum *acacia* and gum Arabic, which come from some origins, are commonly used interchangeably. Gum Arabic has a variety of applications in the pharmaceutical business and is frequently used in the food industry as an emulsifier, thickening agent, and stabilizer (Phillips, G. O., & Williams, P. A., 2009). Qualities: Because Gum Arabic (GA) is a good emulsifier and has the ability to create films, it is utilized successfully in edible coatings. Its hydrophobic structural elements, which also result in the encapsulation of flavours and aromas, give it the ability to emulsify (Baldwin, E. A., *et al*., 2011).

1.2. Karaya Gum:

Karaya Gum is produced as an exudate from the *Sterculia Urens* tree. The Gum's composition varies depending on the species from which it is obtained. Chemically, karaya gum is an acid polysaccharide made up of Galactose, Rhamnose, and Galacturonic acid. It functions as both a thickening and a laxative. It has properties similar to those of Gum tragacanth. Gum karaya's limited solubility makes it unsuitable for edible coatings. This gum's emulsifying properties make it suitable for usage in dairy products, baking industries, and pharmaceuticals. It is also utilized as thickeners in the textile industry (Mirhosseini, H., & Amid, B.T., 2012).

1.3. Ghatti Gum:

Gum ghatti is a translucent containing a complex polysaccharide obtained from the plant *Anogeissus latifolia*, a deciduous tree of the Combretaceae family found primarily in India. This gum is moderately soluble in water, but it swells and forms dispersions, making it less helpful in the food industry than other gums. Furthermore, the film is fragile in nature. However, it is employed for drug delivery in terms of viscosity and emulsifying qualities, Gum ghatti is very similar to gum Arabic. However, its viscosity is less than of gum karaya. Gum ghatti is compatible with other plant hydrocolloids; yet, due to the limited solubility and Brittleness of its films, it is rarely used as edible coating in the food Industry (Baldwin, E. A., *et al*., 2011).

1.4. Tragacanth Gum:

Gum tragacanth (GT) is a dried exudate obtain from the stem of Asian species of *Astragalus leguminosae*. GT swells dramatically in both cold and hot water. It

is commercially employed as a natural emulsifier and thickening in the pharmaceutical and allied sector due to its stability in a wide range of temperatures and PH, similar to gum Arabic, and its efficiency as an emulsifier (Mohamadina, Z., *et al*., 2008). It also exhibits exceptional resilience against microbial attack, thickening capabilities, and functions as an emulsion stabilizer (Mohebbi, M., *et al*., 2012).

1.5. Cashew Gum:

The cashew Tree (*Anacardium occidentale l.*) Is the source of Cashew gum Because the addition of plasticizer and surfactants to cashew gum coating solution reduces its opacity, surface tension, and improves wettability (Carneiro-da-Cunha, M. G., *et al*., 2009)? It can be applied to minimally processed fruit like Golden Apples, increasing the coating solution's Compatibility with the fruit's skin surface. The Self life of mangoes (Magnifera indica var. Tommy Atkins) has been extended through the application of edible coatings based on cashew gums (Souza, M. P., *et al*., 2010).

2. Traditional Uses of Wild Edible Gums:

2.1. *Acacia nilotica (L.) Wild.*

Local Name: Babul, Teli Babul
Family: Mimosaceae
Gum is called 'Indian gum Arabic'. It is native to the Indian subcontinent, as well as Tropical Africa, Burma, Sri Lanka, Saudi Arabia, Egypt, and West and Eastern Sudan. Plants are abundant in central Indian Woods in Madhya Pradesh, Chhattisgarh, Andhra Pradesh, Orissa, Jharkhand, and Bihar, as well as to some extent in Gujarat and Rajasthan.
Mode of Use: Plant gum can be eaten raw and fried.
Medicinal Uses: Astringent and styptic; Used to treat sore throats, asthma, diabetes, bleeding piles, burns, leucorrhoea, urine and vaginal discharges, and halt bleeding (Chatterjee, A., 1991, Kumar, S., & Chauhan, A. K. S., 2005).

2.2. *Acacia catechu (L.F) Wild.*

Local Name: Khair
Family: Mimosaceae
Another name for gum is "khayer gum or cutch." With the exception of humid and cold climates, it is extensively depressed throughout China and India. Additionally, it can be found in the outer Himalaya from Jammu to Assam, sub-Himalaya tract, and the eastern slopes of the Western Ghats.
Mode of Use: The plant's gum is fried in ghee, combined with light-baked wheat flour and dry fruits, and used to make "Ladoos." These are particularly given to postpartum mothers to relieve joint problems, and the gum is thought to relax the tightness in the abdominal muscles. Elderly persons are also given Ladoos to help them regain their strength.
Medicinal Uses: Tonic, emollient, and demulcent (Chopra, R. N., & Nayar, S. L., 1956).

2.3. Anogeissus latifolia (Roxb. Ex D.C.) Wall.

Local Name: Dhavda, Dhamoda
Family: Combretaceae
The plant's gum is known as ghatti Gum. *Anogeissus latifolia* is endemic to India, Myanmar, Nepal, and Sri Lanka, and can be found all across tropical Asia. Approximately 1200 tons of gum are extracted in India each year.

Mode of Use: Fried gum was eaten. Specially given to women after delivery to alleviate joint pain.
Medicinal Uses: Astringent, postnatal tonic, and rheumatism (Chatterjee, A., 1991, Jain, S. K., 1991).

2.4. Boswellia serrata Roxb.

Local Name: Salai
Family: Burseraceae
The gum is termed 'Indian Frankincense'. Trees flourish in tropical regions of Asia and Africa.
Mode of Use: Gum can be eaten raw or cooked. Considered Tonic.
Medicinal Uses: Diaphoretic, diuretic, astringent, emollient, stimulant, Antiseptic, and anti- tumour. Useful in rheumatism, joint pain, diarrhoea, dysentery, piles, cough, bronchitis, mouth sores, asthma, jaundice, syphilis ointment, nocturnal emission, menstrual problem, neurological disorders, convulsions, testicular trouble, urinary disorders, and skin illnesses (Chopra, R. N., *et al*., 1956; Kapur, S. K., *et al*., 1992; Ravi Upadhyay, R. U. *et al*., 2000).

2.5. Gardenia resinifera Roth

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Local Name: Dikemali
Family: Rubiaceae
Gum is also known as 'Cumbi' or 'DikeMali'. The plant thrives in India, Bangladesh, and Myanmar.
Mode of Use: People consume fried gum.
Medicinal Uses: Antispasmodic, anthelmintic, expectorant, diaphoretic, and carminative. Gardenia gum is used in Ayurveda to enhance appetite, act as a colon astringent, Reduce bronchitis pain, vomiting, and constipation (Lardos, A., *et al*., 2011).

2.6. Sterculia urens Roxb.

Local Name: Kadhai
Family: Sterculiaceae
Gum is usually referred to as 'Karaya gum'. It is predominantly found in the eastern or Western Ghats, the Himalayan Forests, and the West and central parts of India, including Andhra Pradesh, Bihar, Gujarat, Maharashtra, and Rajasthan. It is also available in Australia, Pakistan, Indonesia, Sudan, and Vietnam. A mature tree may produce 1 to 5 kg of gum per season.
Mode of Use: Children ate gum uncooked. Fried gum is used to make a 'ladoos' mixture with dry fruits. This is said to be the greatest tonic, and it is frequently administered throughout the winter season.
Medicinal Uses: Laxative, tonic, cooling, used for throat irritation, blisters, dysentery, stomach ailments, and joint discomfort. Prescribed for women, especially for uterine constructions following childbirth (Jain, S. K., 1991, Sharma, P. P., & Singh, N. P., 2000).

3. Phytochemical Composition:

Babul, Khair, dhawda, Tragacanth, Kadhai, Salai, and all gums exudates after processing were analysed for the primary phytochemicals, such as flavonoids, Saponin alkaloids, steroids, tannin, amino acid/proteins, and carbohydrates, using standard qualitative chemical tastes. (Siddiqui, M. Z., *et al*., 2016). After research we can say that flavonoids, and alkaloids, are majorly contains found in Babul gum (*Acacia nilotica)*, khair gum (*Acacia catechu*) and Dhawda gum (*Anogeissus slatifolia)*. Major compounds isolated from *Acacia catechu* in Flavonoid class, Catechin, Epicatechin, Epicatechin gallate, Epigallocatechin gallate, Quercetin, Kaempferol (Kumari, M., *et al*., 2022). And

compounds found abundantly *Acacia nilotica* Quercetin, Kaempferol, Catechin, and Luteolin. A basic study of gums' structural features is necessary to comprehend their rheological, gelling, and physical properties. The term "phytochemical" refers to a board range of naturally occurring substances found in plants. The chemical structure and properties of phytochemicals have led to their classification into six main groups (Mirhosseini, H., *et al*., 2012). These include lipids, carbohydrate, Phenolic, Terpenoid, alkaloids, and other substances that include nitrogen. Wild edible gums generated from various plant species have long been known for their nutritional and therapeutic characteristics, and they have played an important role in traditional diets and medicinal practises around the world. These gum are high in Polysaccharide, hydrocolloids, such as mucilage, glucose, and other bioactive chemicals, which have been shown to have antioxidant, anti-inflammatory, diuretic, antibacterial, and antiviral activity. Gums are naturally occurring polysaccharides with a variety of uses in food, pharmaceutical, and textile industries. They are extracted from a variety of plant sources. The Endosperm of seeds, plant exudates, or even seaweed can be used to make these gums. Because they are readily available and have the ability to work in concert, plant-derived gums are especially well-liked. Gum Arabic, tragacanth, and karaya gum are a few of the most well-known and widely utilized plant gums. Plant gums' rheological and functional characteristics have been thoroughly researched, although their phytochemical makeup and possible antioxidant capacities have received comparatively less attention. G65-salmonellive the growing number of consumers looking for natural, plant-based components with possible health advantages (Dhanda, G., *et al*., 2025).

4. Pharmacological Activity in Wild Edible Gums:

Antimicrobial activity of wild edible gums:

4.3. Gum Arabic:

Acacia's Antimicrobial activity is concentrated in its leaves or bark and its extracts have been reported to be inhibitory against *Streptococcus viridans, staphylococcus aureus, Escherichia coli, salmonella Typhi, Bacillus subtilis, shigella sonnei,* and *Bacillus cereus, Candida albicans, Candida glabrata, Aspergillus niger*, and *Rhizoctonia solani* (Baravkar, A. A., *et al*., 2008, Banso., A. 2009, Das, N., & Chatterjee, P. (2014). The Antibacterial activity has been observed primarily in metallic extracts rather than aqueous extracts (Dev, S. N. C., *et al*., 2014). The leaf extract was also reported to be active against *Serratia marcescens, Erwinia herbicola, Xanthomonas sp. Arthrobactor chlorophenolicus* and fungal strains *Botrytis cineria, Fusarium oxysporum* and a flavus. Antimicrobial activity was found in the ethanol extract but not in chloroform, benzene, ether, or aqueous extracts. *Acacia nilotica* leaves contained flavonoids and alkaloids that inhibited *S. aureus, B. subtilis, E. coli, and S. typhi* but did not inhibit *P. aeruginosa* or *K. pneumonia*. For sensitive bacteria, the minimum inhibitory concentration (MIC) ranged from 0.125 to 1 mg/ml. Additionally, Saponins from Acacia spp. Inhibit *P. aeruginosa*, while Polysaccharides inhibit S. aureus and B. subtilis (Vijayasanthi, M., *et al*., 2012). The alcoholic extract of *Acacia nilotica* Gum was found to inhibit E. coli, B. cereus, and *Cercospora pongamiae*, but not *A. niger*, which could be inhibited by its hot water extract (Sravani, P., *et al*., 2014).

4.4. Gum Chironji:

Chironji leaves are recognized to have antibacterial properties (Niratker, C., & Sailaja, D., 2014). Just like *Acacia*. Saponis, flavonoids, steroids, cardiac glycosides, carbohydrates, tannins and phenolic are all found in Chironji leaves. The highest activity in found in its alcoholic extract, whereas the lowest activity is found in its aqueous extract *E.coli, P. aeruginosa, S. aureus, A. niger*, and *Penicillium sp.* Can all be inhibited by its Extract, The latter has been shown to extract Chironji leaves with superior antibacterial activity compared to ethanol, and the extract may inhibit *B. subtilis, S. aureus, S. coli, and S. Typhi.* Extracts of *B. Lanzan* leaves in water, petroleum ether, and chloroform have been shown to have very little antibacterial action (Manjunath, J. R., & Mithun, N. M., 2011). Gum Chironji's Antibacterial Properties are seldom mentioned. Gum Chironji has been claimed to be effective for Inter-coastal discomfort and diarrhoea. However, it is most typically used to adulterate guggul (oleoresin from *Commiphora wightii*) by adding some perfumes or fragrance (Sravani, P., *et al*., 2014).

4.5. Gum Tragacanth:

Guar gum, gum tragacanth, and gum *acacia* ethanol extracts have been shown to have anti-microbial action against *C. albicans, S. aureus, E. coli, K. pneumonia, P. aeruginosa,* and *St. Pneumonia*. Compared to other gum extracts, tragacanth gum extract exhibited noticeably greater antibacterial activity (Singh, B. R., *et al*., 2015). Similar to Karaya and Ghatti gums, gum tragacanth is not thought to have any significant antimicrobial activity. However, because of its broad-spectrum antimicrobial activity, it has been used as an ideal material for the green synthesis of nanoparticles and nanofiber scaffolds that have application in infection control (Ranjbar-Mohammadi, M., *et al*., 2013). Natural gums are perfect for the Nano synthesis of micro capsule containing herbal extracts (Ghayempour, S., *et al*., 2015). Because of their biodegradability, Nano-toxicity, non-mutagenic nature, natural availability, increased resistance to microbiological attacks, and extended shelf life. Furthermore incorporating 3% tragacanth gum and 3% cholesterol into cockerels' diets reduced the development of hypercholesterolemia (Fahrenbach, M. J., *et al*., 1966). Instead of being blocked, several possible pathogens, such as Klebsiella, Serratia, and Yersinia, ferment tragacanth gum, showing that it degrades quickly in the intestine (Ochuba, G. U., & von Riesen, V. L., 1980).

4.6. Kikar Gum:

It is the dried woody sap from the *Prosopis juliflora (Neltuma Juliflora)* (vilayati kikar) plant. *P. juliflora's* exudates gum is odourless and tasteless. It is a non-crystalline material that dissolves in water but not in alcohol or ether. It has been used to treat ocular infections. (Vimal, O. P., *et al*., 1986). Though gum has rarely been studied for its antimicrobial activity. The bark of the tree (source of gum) has been shown to possess antimicrobial activity against *E.coli, Proteus mirabilis, P, aeruginosa, K. pneumonia, S. paratyphi B, Shigella flexneri, St. pyogenes,* and *S. aureus* In its methanol extract due to alkaloids in it, the MIC of bark extract was determined to be 4.6 to 7.5 mg/ml (Vedak, S., & Raut, S. V., 2014). Hot and cold aqueous extracts of *P. juliflora* leaves has been shown to be a powerful antibacterial at 100 mg/ml. Against *B. subtilis, E. coli, E. faecalis, K. pneumoniae, P. aeruginosa, S. aureus, S. epidermidis, St. pyogenes, S. Typhi,* and *S. Typhimurium* (Thakur, R., *et al*., 2014).

Antioxidant activity of wild edible Gums:

4.7. Khair Gum:

According to a DPPH test, plant extracts from *A. catechu* exhibit strong antioxidant potential. The maximum scavenging ability was found in the ethyl acetate bark fraction (EAFB), whereas the lowest was found in the aqueous fraction of bark (AFB). EAFB had the highest ABTS radical in the ABTS assay, followed by AFB, n-butanol bark fraction (NBFB) and bark methanol extract (MEB). EAFB was the most efficient in term of ferric iron reduction potential, followed by MEB, NBFB, and AFB. EAFB had the strongest decreasing activity and AFB the lowest in the CUPRAC test. EAFB had the highest scavenging potential in the superoxide radical scavenging (SRS) Experiment, while AFB head the lowest. MEB and NBFB did not significantly differ from one another. EAFB had the lowest IC50 value in the peroxyl radical scavenging experiment, followed by MEB, NBFB, and AFB. There was no discernible difference between MEB and NBFB. The nutritional and functional qualities of wild edible gums, which are made from the exudates of different plant species, have long been acknowledged, and there is growing interest in their potential as natural antioxidants. In addition to supporting the diet of under prevailed groups, these gum are traditionally used as food and medicine. They can also help advance food sovereignty and sustainability. Gum and mucilages are examples of polysaccharide, hydrocolloids, which are widely distributed in higher plants and plentiful in nature (Cavichi, L. V., *et al*., 2023).

4.8. Babul Gum:

Antioxidants can interfere with oxidative processes by reacting with free radicals, chelating catalytic metals, and serving as oxygen scavengers, allowing the human body to prevent oxidative damage (Gowri, S. S., *et al*., 2011). Various epidemiological studies have shown that polyphenolic chemicals, particularly polyphenols derived from methanol bark extracts of Acacia or *Vachellia nilotica*, have excellent antioxidant activities (Yadav, A., *et al*., 2018). Because they can scavenge oxygen-nitrogen-derived free radicals by donating hydrogen atoms or electrons,

chelating metal catalysts, activating antioxidant enzymes, and inhibiting oxidases, natural antioxidants such as flavonoids, phenolic, tannins, curcumin, and terpenoids found in *Vachellia nilotica* can limit the access of oxidant and other harmful molecules (Singh, B. N., *et al*., 2009).

Anti-cancer activity of wild edible Gums:

4.9. Gum Arabic:

The studies found that Gum Arabic had anti-carcinogenic properties. It is yet unknown what mode of action gum Arabic uses to alter gene expressions related to cancer growth. To determine the activities method (Nasir O, *et al*., 2010). Such as indomethacin, aspirin, acetaminophen, and gentamicin, as well as some chemotherapeutic medications, such as cyclophosphamide, doxorubicin, and cisplatin (Elshama SS., 2018). The protective effect of Arabic Gum Consistently and with the advancement of research shows that it is sufficient to prevent the lethality of many chemical substances. Mercury and its different forms are thought to be dangerous industrial and environmental pollutants that alter human body tissues. The aqueous extracts of Gum Arabic Significant of anti-cancer activity. They primarily accumulate in the kidneys, causing severe renal failure. They also lower glutathione levels and raise reactive oxygen species levels, Such as hydrogen peroxide and superoxide radical. In this particular instance. (Gado, A. M., & Aldahmash, B. A., 2013). Shown that Arabic gum has a successful cytoprotective effect in controlling the nephrotoxicity of mercuric chloride by maintaining the activity of antioxidant enzymes in the renal tissues linked to a reduction in the oxidative stress caused by the detrimental effects of mercuric chloride.

4.10. Babul Gum:

Vachellia nilotica has significant anti-cancer potential due to its high concentration of bio active ingredients, including gallic acid, ellagic acid, kaempferol, catechin, and tannins. These compounds have strong antioxidant and anti-inflammatory qualities, and they can induce apoptosis in cancer cells. More precisely, gallic acid, and ellagic acid induce programmed cell death and prevent the growth of cancer cells, whilst kaempferol and catechin cause cell cycle arrest and reduce angiogenesis, depriving tumours of oxyjsaingen and nutrients (Imran M, *et al*., 2019). The aqueous methanol extracts from *Vachellia nilotica* (Diab, K. A., *et al*., 2022), have been shown in experiments to effectively target a variety of cancers, including leukaemia (THP-1), breast (MCF-7), prostate, human lung (A549), and colon cancers. According to these results, *Vachellia nilotica* might be useful in integrative cancer treatments. Extracts from *Vachellia nilotica* leaves, gum, and flowers have been shown chemo-preventive effects against DMBA-induced cutaneous papillomas in mice (Kaur K, *et al*., 2002). It's been demonstrated that ellagic acid, which comes from *Vachellia nilotica* can suppress proliferation and induce apoptosis in cervical cancer (CaSki) cells. When tested against MDA-MB-231 breast cancer cells, the leaf extracts of *Vachellia nilotica* shown anti-cancer activity (Alobaid HM, *et al*., 2023).

CONCLUSION:

Wild edible gums, naturally generated from plant exudates, are essential multifunctional biopolymers in both traditional and modern industries. Their distinct physiochemical properties, such as high-water retention, viscosity enhancement, and film-forming capabilities. In addition to having strong antioxidant properties, antimicrobial capacity, and encouraging anti-cancer potential. Make them critical for improving the texture, stability, and sensory qualities of food products, as well as providing substantial therapeutic and industrial applications. The broad variety of gums, including Arabic, Karaya, Ghatti, Tragacanth, and Cashew gums, exhibit various biochemical compositions and functions that support their usage as thickeners, emulsifiers, stabilizer, and carriers in pharmaceutical formulations. Despite some shortcomings, Due to variations in solubility and film integrity, continuing research into better extraction techniques and biogenic synthesis is expanding their applications, particularly in edible coatings, nanoparticle creation, and drug delivery systems. As the need for natural, ecological, and health-promoting substances rises, more research on wild edible gums is needed to realise their full potential in addressing current nutritional, pharmaceutical, and technological advancement

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