

REVIEW ARTICLE

Unleashing The Potential of Herbs for Treatment of Gall Bladder Stones

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ABSTRACT

Gallbladder stones, known as gallstones, are solid deposits that form in the gallbladder due to imbalances in bile composition. These stones can lead to discomfort, pain, and potential complications. While surgical interventions are common for severe cases, interest in herbal therapy as an alternative or complementary approach is growing. Gall bladder acts as one of the most prominent accessory gland associated with the liver for the digestion of food in human body. The bile is produced in different lobes of liver and is transported to the gall bladder through the cystic duct. The formed bile contains an adequate number of synthetic compounds to disintegrate the cholesterol discharged by our liver. However, assuming our liver discharges more cholesterol than the bile can disintegrate, the overabundance cholesterol might frame into gems and in the end into stones. The incidence of gall bladder is quite very common in today's population and many a times it is not detected in the early stage of development. Although, we have different approaches available for the treatment of gall bladder stones, but due to lesser side effects the natural herbs are always preferred. The natural herbs are always considered as safe as compared to modern system of medicines, thus this review context will help to gather more knowledge on variety of herbs for the treatment of gall bladder stones. Herbal therapy draws from traditional medicine systems, offering potential benefits through holistic approaches. However, caution is warranted due to limited scientific evidence, potential interactions, and individual variability.

Keywords: Cholelithiasis, Anticholelithiatic plant, Gall bladder, Herbal drug.

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INTRODUCTION

Gall bladder which acts as an accessory digestive organ plays its role by acting as a temporary reservoir of bile juice released from liver. Bile which is produced from different hepatic lobes leaves liver through hepatic duct and make its entry into the interior of the gall bladder through cystic duct. Bile is a harmonious combination of bile salts, cholesterol, lecithin, bilirubin and other important metabolites. Bile, which is required for emulsification of fats present on digested food hence produced in hepatic lobes of liver, stored in gall bladder and flows into duodenum at the time of requirement when fat in food in needed to be digested. In bile, cholesterol is in balance with bile salts and with phosphatidylcholine. At the point when the cholesterol in the bile turns out to be concentrated, it immerses the bile acids and starts to frame crystals. The extent between bile salts to cholesterol is the main, considering the way that the bile salts are acids, and without this the cholesterol would frame stones. As such, adequate bile acids are expected to hold the cholesterol back from framing stones in the gallbladder [1] such condition of formation of stones in the gall bladder is known as Cholelithiasis. Gallbladder stones, or gallstones, are solid particles that form within the gallbladder. These stones can vary in size and composition, with the most common types being cholesterol stones and pigment stones. Cholesterol stones form when there's an imbalance between the cholesterol and bile salts in the bile, leading to crystallization. Pigment stones, on the other hand, are composed of bilirubin and other components. The presence of gallstones can cause significant discomfort and pain, especially if a stone blocks the flow of bile through the common bile duct. This blockage can lead to intense abdominal pain, often referred to as a gallbladder attack. Symptoms of gallbladder stones can

also include nausea, vomiting, and inflammation of the gallbladder (cholecystitis). In severe cases, gallstones can lead to complications such as inflammation of the pancreas (pancreatitis) if they obstruct the pancreatic duct.

Formation of Gall stones

There are three main ways to form gallstones, cholesterol super saturation where typically, bile dissolves the amount of cholesterol released by the liver. But if the liver produces more cholesterol than is digested by the bile, excess cholesterol can be excreted as crystals. The crystals are trapped in the gallbladder mucus and produce gallbladder sludge. Over time, crystals can grow and form stones and clog channels, which can eventually cause gallstone disease. Secondly due to excess bilirubin, which is a yellow dye obtained by the breakdown of red blood cells, is excreted by the bile by the liver cells. Some hematological conditions cause the liver to produce too much bilirubin by processing the degradation of hemoglobin. This excess of bilirubin can also cause gallstones. Thirdly, if the gallbladder is not effectively removed, bile can concentrate and become gallstones. Based on the etiology, the gall stones have different level of compositions. Cholesterol gallstones, brown pigment gallstones and black pigment gallstones are classified as the three most common types of gallstone and among them 90% of the reported gallstones are cholesterol gallstones. Moreover, each type of these gallstones has a unique bunch of risk factors.

Risk associated with Gall Stones

Some of the risk factors for cholesterol gallstones are obesity, age, female gender, pregnancy, genetics, nutrition, rapid weight loss, and some medications [2]. Emergence of disease Cholelithiasis has been dated back to ancient civilization. It has also been reported in Egyptian a mummy that dates back to 3400 B.C. It shows up possible that Charaka (second century B.C.) and Sushruta (sixth Century B.C.) from India were likewise acquainted with this biliary tract infection [3]. In the United States, 6% of men and 9% of women have gallstones, a large portion of which are asymptomatic [2]. In developing nations, gallstones are the significant medical problem. Gallstones sicknesses for the most part happen in women as contrast with men. In generally speaking women are two times opportunities to foster gallstones as opposed to male. Moreover, Pregnancy additionally leans toward gallstones development because of hormonal effects on bile structure [3]. Cholelithiasis is very normal in grown-ups, with the commonness in India being 3-5%. While gallstones most normally happen in individuals over 40 years old; youngsters are progressively being impacted. The occurrence of stones is seen in 2% of child populace. The pervasiveness is still high among children with obesity (5%). Both girls and boys are equally infected during childhood. Be that as it may, after pubescence, the recurrence is essentially higher in females than in males and is similar to adult proportion of 4:1 female prevalence. Moreover due to difference in food and water, prevalence of gall stones have been reported to be seven times more common in Northern states of India than in Southern states. Moreover in terms of types, cholesterol stones and mixed stones are more likely to be seen in patients from North India as compared to Southern parts of India where pigment stones are more prevalent [4].

Current Therapies available for Gall stones

In order to treat Cholelithiasis, various treatments have been developed in growing medical technology. Patients with side effects with intense Cholecystitis usually admitted to emergency clinic followed by using intravenous antibiotics. They frequently likewise require forceful revival and ICU-level consideration along with careful mediation to deplete a disease in the biliary tract [2, 5, 6, 7]. In order to avoid surgery, clinical treatment with ursodeoxycholic acid is a choice yet not viable. However, in such case, stones should be under 1cm with elevated cholesterol content. Moreover such treatment can require 9months or a year to disintegrate the stone and is reported to be successful only in half of cases. Again, extracorporeal shockwave lithotripsy for non-calcified gallstones is another choice [2]. Among synthetic medicines, Cholic acid which is a bile acid derivative plays an important role in bile flow and feedback, Fluvastatin cure gall disease by reducing LDL level by competitive inhibition, Gemfibrozil which is a fatty acid derivative cure gall bladder by reducing triglycerides [8]. Although treatment in terms of allopathic or synthetic medicines and surgeries are available in but risk associated with them cannot be denied. Moreover such treatment of Cholelithiasis is very costly and not for people of all strata of the developing world. Thus inclination towards herbal medicines is unquestionable. Therefore, treatment of gall bladder infection with plants parts and its derived compounds which not only avoid burdensome manufacturing steps but also found to be cost effective with least side effects is now being attracted by research professionals.

Approach towards herbal therapy for Gall stone

Herbal treatments are derived from natural plant sources and have been used for centuries in traditional medicine systems. However, it's important to understand the potential benefits and considerations before opting for herbal treatment for gallbladder stones. Herbal treatments often take a holistic approach to health, aiming to address not only the immediate symptoms but also underlying imbalances in the body that might contribute to gallstone formation. Some herbs are believed to have anti-inflammatory and pain-relieving properties, which could provide relief from the discomfort associated with gallbladder stones. Certain herbs are thought to support digestive processes, including the breakdown of fats, which might aid in preventing new stone formation. Herbal remedies are generally considered to have fewer side effects compared to some medical interventions, although individual reactions can vary. Many traditional medicine systems, such as Ayurveda and Traditional Chinese Medicine, have a history of using specific herbs to support gallbladder health.

An anticholelithiatic plant has been used to cure gall stones since ages and also helps to keep people away from their occurrence. Anticholelithiatic plants are used since old periods prior to envisioning current drugs for treating (disintegration or end) gallstones and to keep away from their repeat. Different plants are used to fix and prevent Cholelithiasis. Although recovery rate of ethno medicine or herbal drugs are slower compared to synthetic medicine, but they are less expensive and hence affordable by people of all strata, traditionally proven to dissolve or eliminate stones from gall bladder and hence cure Cholelithiasis. Hence affordability, least side effects, avoidance of burdensome synthetic process of herbal medicine hence can be able to reveal not only their therapeutic potential but also attract research professionals and encourages patient's belief [1, 9].

The present study based on reviewing of literature published on various reputed journals with the objective to compile data regarding reported works on promising ethno-medicine from India that has been tested for its pharmacological properties which are listed in the table-1 and shown in figure-1 to figure-5 respectively. During preparation of this report analysis of prominent literature from various data base sources like science direct, plumbed have also been taken into consideration.

Considerations and Caveats for herbal therapy

Herbal therapy, often rooted in traditional medicine systems, is increasingly sought after as an alternative or complementary approach to managing various health conditions, including gallstones. While herbs offer potential benefits, it's essential to approach herbal therapy for gallstones with careful consideration and awareness of potential caveats.

Before embarking on any herbal therapy regimen, it's imperative to consult with qualified healthcare professionals. A doctor can assess an individual health situation, including the size and severity of gallstones, the medical history, and any ongoing treatments. They can provide insights into whether herbal therapy is a suitable option or if medical interventions are more appropriate. Self-diagnosis is not recommended. Accurate diagnosis of gallstones and their specific characteristics requires medical evaluation such as ultrasound or other imaging techniques. Once diagnosed, consistent monitoring of the condition by medical professionals is vital, even if you're pursuing herbal treatment. Herbs, like pharmaceutical drugs, can interact with other medications you might be taking. Some interactions can lead to adverse effects or reduce the efficacy of either the herbal remedy or prescribed medication. Communicate openly with the healthcare provider about all the supplements and medications you are using to ensure there are no harmful interactions. Herbal supplements are not regulated in the same way as prescription drugs. This can result in variability in product quality, potency, and purity. Choose reputable brands that adhere to quality control standards and consider discussing specific product recommendations with the healthcare provider. Each person's body reacts differently to herbal remedies. What works for one individual might not work for another. Patience and consistent communication with healthcare professionals are key to assessing the effectiveness of the chosen herbal therapy. Allergic reactions to herbs are possible, ranging from mild skin irritations to severe allergic responses. It's wise to be aware of potential allergens in any herbal remedy and discontinue use if you experience adverse reactions. While some herbs are believed to have beneficial effects on gallstones due to their historical use in traditional medicine, scientific research on their efficacy is often lacking or inconclusive. Relying solely on anecdotal evidence can be risky. Herbal therapies might be more appropriate for individuals with smaller, non-obstructive gallstones or as preventive measures. Large or obstructive stones may require more immediate and invasive medical interventions. Herbal therapy should not replace essential lifestyle modifications such as maintaining a balanced diet, staying hydrated, and engaging in regular physical activity. Integrating herbs should complement these efforts rather than replace them. While herbal therapy may show promise, it could take longer to see results compared to more conventional medical

interventions. If the condition is causing severe symptoms, delaying medical treatment could lead to complications.

Table 1: Details of herbs used for prevention and cure of Cholelithiasis

Sl. No.	Scientific name of the plant	Family	Plant part use
1	<i>Achillea millefolium</i>	Asteraceae	Leaves decoction [10]
2	<i>Agrimonia eupatoria</i>	Rosaceae	Whole plant [11]
3	<i>Aloe vera</i>	Liliaceae	Leaves juice [12]
4	<i>Apium graveolens</i>	Apiaceae	Roots [13]
5	<i>Arctostaphylos uva-ursi</i> (bearberry)	Ericaceae	Leaves infusion [14]
6	<i>Bauhinia cumanensis</i>	Fabaceae	Whole plant [15]
7	<i>Bauhinia excelsa</i>	Leguminosae	Whole plant [16]
8	<i>Berberis aquifolium</i> (Oregon grape)	Berberidaceae	Roots [17]
9	<i>Berberis aristata</i>	Berberidaceae	Roots [18]
10	<i>Bidens tripartita</i>	Asteraceae	Roots [19]
11	<i>Boerhavia diffusa</i> (punarnava)	Nyctaginaceae	Roots [20, 21]
12	<i>Borreria articularis</i>	Rubiaceae	Leaves [22]
13	<i>Borreria hispida</i>	Rubiaceae	Leaves [23]
14	<i>Brassica napus</i>	Brassicaceae	Seed oil [24]
15	<i>Bryonia dioica</i>	Cucurbitaceae	Roots [25]
16	<i>Bryophyllum pinnatum</i>	Crassulaceae	Leaves decoction [25, 26]
17	<i>Capraria biflora</i>	Scrophulariaceae	Leaves [16]
18	<i>Caulophyllum robustum</i>	Berberidaceae	Roots decoction [19]
19	<i>Chamaesyce hirta</i>	Euphorbiaceae	Whole plant [16]
20	<i>Chelone glabra</i>	Plantaginaceae	Whole plant [27]
21	<i>Chionanthus virginicus</i>	Oleaceae	Root bark [27]
22	<i>Cichorium intybus</i>	Asteraceae	Flowers [28]
23	<i>Cissus verticillata</i>	Vitaceae	Leaves decoction [15]
24	<i>Citrus limon</i>	Rutaceae	Fruit juice [29]
25	<i>Citrus sinensis</i>	Rutaceae	Fruit juice [29]
26	<i>Cocos nucifera</i>	Arecaceae	Fruit oil [30]
27	<i>Costus scaber</i>	Costaceae	Whole plant [16]
28	<i>Curcuma longa</i>	Zingiberaceae	Roots [20]
29	<i>Eutrochium purpureum</i>	Asteraceae	Roots [17]
30	<i>Galium triflorum</i>	Rubiceae	Plant infusion [19]
31	<i>Gomphrena globosa</i>	Amaranthaceae	Flowers [16]
32	<i>Haloxylon salicornicum</i>	Amaranthaceae	Aerial parts [20]
33	<i>Herniaria hirsuta</i>	Caryophyllaceae	Whole plant [29]
34	<i>Hordeum vulgare</i>	Poaceae	Seeds [31]
35	<i>Hydrangea arborescens</i>	Hydrangeaceae	Roots [32]
36	<i>Juniperus communis</i>	Cupressaceae	Roots [33]
37	<i>Lycopersicon esculentum</i>	Solanaceae	Fruits [34]
38	<i>Macrotyloma uniflorum</i>	Fabaceae	Seeds [35]
39	<i>Magnolia officinalis</i>	Magnoliaceae	Bark [36]
40	<i>Malva sylvestris</i>	Malvaceae	Leaves infusion [37, 38]
41	<i>Menyanthes trifoliata</i>	Menyanthaceae	Leaves infusion [39]
42	<i>Orthosiphon aristatus</i>	Lamiaceae	Leaves [40]
43	<i>Petroselinum crispum</i>	Apiaceae	Roots [41]
44	<i>Phyllanthus amarus</i>	Phyllanthaceae	Leaves [42]
45	<i>Pinus sylvestris</i>	Pinaceae	Needles (Leaves) oil [43]
46	<i>Plantago major</i>	Plantaginaceae	Seeds [44]
47	<i>Raphanus sativus</i>	Brassicaceae	Root juice [45]
48	<i>Rhamnus purshiana</i>	Brassicaceae	Bark [46]
34	<i>Hordeum vulgare</i>	Poaceae	Seeds [31]
35	<i>Hydrangea arborescens</i>	Hydrangeaceae	Roots [32]
36	<i>Juniperus communis</i>	Cupressaceae	Roots [33]
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38	<i>Macrotyloma uniflorum</i>	Fabaceae	Seeds [35]
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45	<i>Pinus sylvestris</i>	Pinaceae	Needles (Leaves) oil [43]
46	<i>Plantago major</i>	Plantaginaceae	Seeds [44]
47	<i>Raphanus sativus</i>	Brassicaceae	Root juice [45]
48	<i>Rhamnus purshiana</i>	Brassicaceae	Bark [46]
49	<i>Portulaca oleracea</i>	Portulacaceae	leaves [16]
50	<i>Rubia cordifolia</i>	Rubiaceae	Roots [47]
51	<i>Ruscus aculeatus</i>	Asparagaceae	Roots [48]
52	<i>Scutellaria baicalensis</i>	Lamiaceae	Roots [49]
53	<i>Sorbus americana</i>	Rosaceae	Fruits without seeds[14]
54	<i>Trianthema monogyna</i>	Aizoaceae	Leaves [48]
55	<i>Taraxacum officinale</i>	Asteraceae	Roots decoction [50, 51]
56	<i>Vaccinium macrocarpon</i>	Ericaceae	Berry juice [52]
57	<i>Vitis vinifera</i>	Vitaceae	Fruits [48]
58	<i>Zea mays</i>	Poaceae	Cobs and corn silk [55]
59	<i>Zingiber officinale</i>	Zingiberaceae	Rhizome [44]
60	<i>Lysimachiae Herba</i>	Primulacea	Whole plant [54]
61	<i>Lysimachia christinae</i>	Primulacea	Whole plant [55]
62	<i>Desmodium stryacifolium</i>	Fabaceae	Whole plant [55]



Achillea millefolium



Agrimonia eupatoria



Aloe vera



Apium graveolens



Arctostaphylos uva-ursi



Bauhinia cumanensis



Bauhinia excelsa



Berberis aquifolium



Berberis aristata



Bidens tripartita



Boerhavia diffusa



Borreria articularis



Borreria hispida



Brassica napus



Bryonia dioica



Bryophyllum pinnatum



Capraria biflora



Caulophyllum robustum



Chamaesyce hirta



Chelone glabra



Chionanthus virginicus



Cichorium intybus



Cissus verticillata



Citrus limon



Citrus sinensis



Cocos nucifera



Costus scaber



Curcuma longa



Eutrochium purpureum



Galium triflorum



Gomphrena globosa



Haloxylon salicornicum



Herniaria hirsuta



Hordeum vulgare



Hydrangea arborescens



Juniperus communis



Lycopersicon esculentum



Macrotyloma uniflorum



Magnolia officinalis



Malva sylvestris



Matricaria chamomilla



Menyanthes trifoliata



Orthosiphon aristatus



Petroselinum crispum



Phyllanthus amarus



Pinus sylvestris



Plantago major



Raphanus sativus

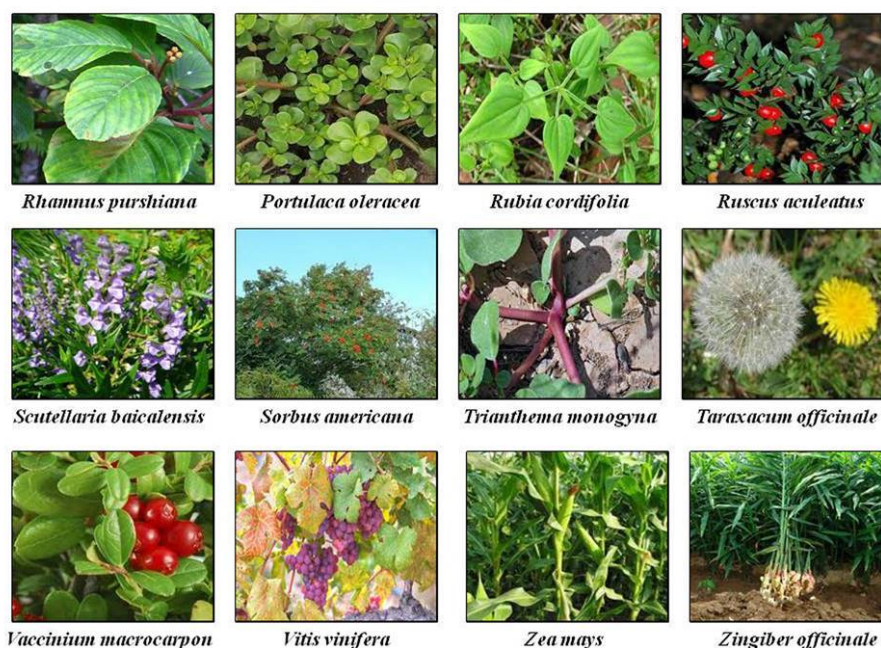


Figure 1: Variou Medicinal Plants

CONCLUSION

In today's sedentary life style and the habit of taking unbalanced diet is considered as one on the most common reason for developing gall bladder stones. The incidence of gall bladder is very common among the Indian population these days. Northern India has one of the greatest detailed rates of gallbladder disease (GBC) on the planet. The frequency of GBC has a particular geographic and ethnic variety. There are many modern therapeutic approaches have evolved now a days, but still people are getting more attracted towards the herbal medicines. The basic reason for this trend is that, the herbs are always considered as safe and they can even be consumed as dietary supplement. The list of the herbs and their uses provided in the current research context has already been established to be safe and effective for the treatment of gall bladder stones. This review is a detailed explanation of herbal medicine which can be effectively used for the gall bladder stone treatment. The detailed explanation of the herbs in this current context will help in identification and appropriate use of herb for the treatment of gall bladder stones. Herbal therapy for gallstones can be a promising avenue for those seeking natural alternatives, but it comes with its own set of considerations and caveats. Open communication with healthcare professionals, accurate diagnosis, and a balanced approach that integrates herbal remedies into a comprehensive treatment plan are essential to ensure safety and wellbeing.

Conflict of Interest

The authors declare no conflict of interest.

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