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## Review of Bhavana Panjankula Thailam: A siddha medicine

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### Abstract

Complications during delivery are the most common problem nowadays. Normal delivery is induced by the proper contraction and relaxation of uterine muscles. Bhavana Panjankula Thailam, which is one of the Siddha formulation medicine provided to the pregnant women in Government hospitals (Ammamagapperu sanjeevi kit), Tamil Nadu, India for normal delivery and treating uterine pain, constipation during pregnancy. In Siddha system uterine pain during pregnancy is due to karpa chudu; it affects both the mother and baby. This paper aims to explore the literary evidence of its use for safe pregnancy and to avoid complications during delivery. Bhavana Panjankula Thailam is made up of 3 herbal ingredients. Further study is to be done to explore its activity scientifically and thereby standardizing the medicine.

**Keywords:** Bhavana Panjankula Thailam, constipation, Karuppachudu, Siddha medicine, Siruneerpathai thabitham

### Introduction

Siddha system of medicine is the oldest documented medical system in the world. 'Siddha medicine' means perfect medicine. In Siddha system of medicine, a physician should be spiritual and have in-depth knowledge. According to the Siddha medicine system, diet and lifestyle play a major role not only in health but also in curing diseases. The drugs used in Siddha medicine were classified based on five properties: suvai (taste), guna (character), veerya (potency), pirivu (class) and mahimai (action)<sup>[1]</sup>.

Bhavana Panjankula Thailam is such a polyherbal Siddha medicine formulated from various medicinal plants such as seeds of Amanakku (*Ricinus communis*), tender water of sevilaneer (*Cocos nucifera*) and gel of chottru kattralai (*Aloe barbadensis*). It is prepared based on the formula mentioned in the Theraiyar Thaila Varkkam and used in Siddha out Patient ward, especially in maternity ward for treating Ganachudu (A type of Pitha disorder), Karuppachudu (A type of Pitha disorder affecting Uterus), Siruneerpathai Thabitham (Urinary tract infections), Sarira Varatchi (Dry Skin), Marunthukalin Ushnam (Body heat due to drugs) and Malachikkal (Constipation). This article aims to analyze the action of each ingredient and its importance in treating the diseases mentioned above.

### Materials and Methods

Bhavana Panjankula Thailam is purchased from SKM Pharma (a GMP certified company), Chennai, Tamil Nadu, India.

**Table 1:** Composition of Bhavana Panjankula Thailam

| S. No. | Name of the drug | Tamil name        | Botanical name                               | Part used            | Quantity             |
|--------|------------------|-------------------|--|----------------------|----------------------|
| 1.     | Castor bean      | Amanakku          | <i>Ricinus communis</i>                      | Seed                 | 1 kg                 |
| 2.     | King Coconut     | Sevilaneer        | <i>Cocos nucifera</i> var. <i>aurantiaca</i> | Tender coconut water | Sufficient qty (Q.S) |
| 3.     | <i>Aloe vera</i> | Chottru kattralai | <i>Aloe barbadensis</i>                      | Gel                  | Sufficient qty (Q.S) |

Amanakku - *Ricinus communis* Linn.

### Botanical description

A perennial, bushy, soft-wooded small tree with a thin greyish brown bark; leaves palmately lobed with seven or more serrate lobes, petioles with conspicuous glands; flowers monoecious in terminal panicle racemes with crowded male flowers on the upper half of the inflorescence and the pistillate at the basal half, sometimes a few pistillate flowers at the top also; fruits globose, explosively dehiscent, 3-seeded capsules, when young it is green and covered with fleshy prickles; seeds oblong with smooth, hard mottled crustaceous testa

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with a white caruncle at the top enclosing oily and fleshy endosperm<sup>[2]</sup>.

### Taxonomic description<sup>[3]</sup>

Domain: *Eukaryota*  
 Kingdom: *Plantae*  
 Phylum: *Spermatophyta*  
 Subphylum: *Angiospermae*  
 Class: *Dicotyledonae*  
 Order: *Euphorbiales*  
 Family: *Euphorbiaceae*  
 Genus: *Ricinus*  
 Species: *Ricinus communis*

### Phytoconstituents

Ricin, ricinoleic acid, ricinine, p-coumaric acid, ferulic acid, o-coumaric acids, syringic acid, cinnamic acids, stigmasterol, fucosterol, and others<sup>[4]</sup>.

### Medicinal property

Oil is used in dermatosis and eczema. Castor oil, derived from the seeds, is a well-known purgative (dose 5–20 ml)<sup>[5]</sup>.

### Pharmacodynamics

Castor oil is a potent laxative that was shown to be effective for short-term constipation. In a prospective study, the group receiving oral castor oil was associated with a higher likelihood of initiation of labour compared to the placebo group<sup>[6]</sup>.

The main pharmacodynamic effects of castor oil are mediated by ricinoleic acid, a hydroxylated fatty acid released from castor oil by intestinal lipases. It was believed that ricinoleic acid acts as an anionic surfactant that reduces net absorption of fluid and electrolytes, and stimulates intestinal peristalsis. However, a recent study suggests that ricinoleic acid interacts with EP3 prostanoid receptors expressed on intestinal and uterine smooth muscles. Via activating EP3 prostanoid receptors on intestinal and uterine smooth muscle cells, ricinoleic acid promotes laxation and uterus contraction, respectively. EP3 receptor act as the major prostanoid receptor in the intestine mediating propulsive effects on gut motility, and activation of EP3 receptors has been demonstrated to evoke contraction of uterine smooth muscle<sup>[6]</sup>.

### Metabolism

Castor oil is hydrolyzed to glycerol and ricinoleic acid via pancreatic or intestinal lipase activity. Ricinoleic acid is metabolized systemically and the metabolites are excreted. Fatty acids are expected to be degraded by pancreatic and intestinal lipase<sup>[6]</sup>.

### Phyto-pharmacology

#### Wound healing activity

The *Ricinus communis* possess wound healing activity due to the active constituent of castor oil which produce antioxidant activity and inhibit lipid peroxidation. Those agents whose inhibits lipid peroxidation is believed to increase the viability of collagen fibrils by increasing the strength of collagen fibres, increasing the circulation, preventing the cell damage and by promoting the DNA synthesis. The study of wound healing activity of castor oil was in terms of scar area, % closure of scar area and epithelization in an excision wound model. Due to the astringent and antimicrobial property the tannins, flavonoids, triterpenoids, and sesquiterpenes promote

the wound healing process, which is responsible for wound contraction and increased rate of epithelialization. The study resulted that the Castor oil showed wound healing activity by reducing the scar area and also the epithelization time in an excision wound model. The comparison study of two different concentrations (5% w/w and 10% w/w) of castor oil has resulted that the 10 % w/w Castor oil ointment possesses better wound-healing property<sup>[7]</sup>.

#### Antiulcer activity

The castor oil of *R. communis* seed possess significant antiulcer properties at a dose of 500 mg/kg and 1000 mg/kg, but at the dose 1000 mg/kg was more potent against the ulceration caused by pylorus ligation, aspirins, and ethanol in rats. The result showed that the antiulcer activity of *R. communis* is due to the cytoprotective action of the drug or strengthening of gastric mucosa and thus enhancing the mucosal defense<sup>[7]</sup>.

### Sevilaneer - *Cocos nucifera* var. *aurantiaca*

#### Botanical description

King coconut is intermediate in form between tall and dwarf. It is semi-tall, has a medium height growth rate, produces a root bole and is predominantly self-pollinating. It bears profusely fruit having an orange epicarp<sup>[8]</sup>.

#### Taxonomic description<sup>[9]</sup>

Domain: *Eukaryota*  
 Kingdom: *Plantae*  
 Phylum: *Spermatophyta*  
 Subphylum: *Angiospermae*  
 Class: *Monocotyledonae*  
 Order: *Arecales*  
 Family: *Arecaceae*  
 Genus: *Cocos*  
 Species: *Cocos nucifera*

#### Phytoconstituents

Trans-zeatin, dihydrozeatin, dihydrozeatin-*O*-glucoside, *meta*-topolin riboside, *N*6-isopentenyladenine, *N*6-benzylaminopurine, and others<sup>[4]</sup>.

#### Medicinal property

Water from tender fruit—cooling, used in thirst, fever, urinary disorders, gastroenteritis, and as a source of K for cholera patients<sup>[5]</sup>.

Tender coconut water is rich in potassium and other minerals and vitamins. It contains reducing sugars 2.22–2.85%, total sugars 3.5–4.25%; brix 5.5–6.2%. It is used as a substitute for normal saline in cases of dehydration<sup>[5]</sup>.

In the Indian Ayurvedic medicine, tender coconut was described as “unctuous, sweet, increasing semen, promoting digestion and clearing the urinary path. Coconut water is traditionally prescribed for dysuria, gastritis, burning pain of the eyes, indigestion, hiccups or even expelling of retained placenta<sup>[10]</sup>.

#### Phyto-pharmacology

##### Hemostatic effect

Coconut water, in citrated plasma of eight healthy volunteers, was observed. Replacement of up to 50% of diluted plasma by water did not influence the initiation of coagulation. Replacing 50% of citrated plasma by coconut water reduced the maximum amplitude of thrombelastography recording dose by 39%<sup>[11]</sup>.

### Intravenous hydration

The use of coconut water as a short-term intravenous hydration fluid for Solomon Island residents was investigated. Fresh young coconut water, administered to eight healthy male volunteers in three doses in separate trials representing 50, 40, and 30% of the 120% fluid loss at 30 and 60 minutes of the 2-hour rehydration period. The percent of body weight loss than was regained (used as an index of percent rehydration) was 75 +/- 5%. The rehydration index, which indicated how much of what was ingested and used for bodyweight restoration, was 1.56 +/- 0.14. There was no difference at any time in serum Na<sup>+</sup> and Cl<sup>-</sup>, serum osmolality, and net fluid balance among the trials. Coconut water was significantly sweeter, caused less nausea and more fullness and no stomach upset, and was easier to consume in a larger amount compared to carbohydrate-electrolyte beverage and plain water. Water, administered to children with diarrhea, was inactive. The results indicated that coconut water composition, sodium and glucose concentrations, and osmolality values vary during maturation of the fruit. In no instance did the coconut water contain sodium and glucose concentrations of value as an oral rehydration solution<sup>[11]</sup>.

*Chottru katralai - Aloe barbadensis* Mill. [=*A. vera* (Linn.) Burm. ]

### Botanical Description

A coarse perennial with a short stem and shallow root system; leaves fleshy in rosettes, sessile, often crowded with horny prickles on the margins, convex below, 45-60 cm long, tapering to a blunt point, surface pale green with irregular white blotches; flowers yellow or orange in racemes; fruits loculicidal capsule<sup>[12]</sup>.

### Taxonomic description<sup>[13]</sup>

Domain: *Eukaryota*  
Kingdom: *Plantae*  
Phylum: *Spermatophyta*  
Subphylum: *Angiospermae*  
Class: *Monocotyledonae*  
Order: *Liliales*  
Family: *Aloaceae*  
Genus: *Aloe*  
Species: *Aloe vera*

### Phytoconstituents

Aloin (barbaloin), arabinose, aloe-emodin, aloetic acid, emodin, aloeresin A–C, aloesone, aloeride, and others<sup>[4]</sup>.

### Action

Purgative (causes griping), emmenagogue. Gel—topically emollient, anti-inflammatory, antimicrobial (used for wound healing, sunburn)<sup>[5]</sup>.

### Key application

In occasional constipation; contraindicated in intestinal obstruction and acutely inflamed intestinal diseases, ulcerative colitis, appendicitis<sup>[5]</sup>.

Antraquinone glycosides, known as aloin, in small doses act as a tonic to the digestive system, and at higher doses become a strong purgative, as well as increase colonic secretions and peristaltic contractions. Resin fraction is also as important as aloin in cathartic action. In *A. barbadensis* the highest percentage of aloin is 21.8%<sup>[5]</sup>.

Aloe produces pelvic congestion and is used for uterine disorders, generally with Fe and carminatives. The pulp is used in menstrual suppressions<sup>[5]</sup>.

A molecule in the Aloe vera gel, acemannan, stimulates macrophages and releases immune system potentiators; enhances the function of T cells and interferon production. Animal studies have shown promising results in sarcoma<sup>[5]</sup>.

The carboxypeptidase and salicylate components of Aloe gel can inhibit bradykinin, a pain-producing agent; C-glycosyl chromone appears to reduce topical inflammation. Aloe gel also slows or inhibits the synthesis of thromboxane, which may accelerate the healing of burns<sup>[5]</sup>.

### Pharmacodynamics

Aloe polysaccharides mediate antioxidant and anti-inflammatory actions, as well as immunoregulatory activities. Various studies indicate that aloe polysaccharides possess effective free radical scavenging activity *in vitro*, and produce potent antioxidant potential during oxidative stress *in vivo*. According to the findings of studies *in vitro* and *in vivo*, aloe polysaccharides exhibit radio protective activity<sup>[14]</sup>.

### Phyto-pharmacology

#### Antibacterial/antifungal/antiviral effects

*Streptococcus pyogenes* and *Streptococcus faecalis* are two microorganisms that have been inhibited by aloe vera gel. Aloe vera gel reportedly was bactericidal against *Pseudomonas aeruginosa* while acemannan prevented it from adhering to human lung epithelial cells in a monolayer culture. A processed aloe vera gel preparation reportedly inhibited the growth of *Candida albicans*. In terms of antiviral effects, acemannan reduced herpes simplex infection in two cultured target cell lines<sup>[15]</sup>.

#### Wound healing effects

The aloe vera gel polysaccharide acemannan was shown to activate macrophages; an effect that improved wound healing in a rat model. A mannose-6-phosphate component of the gel has been credited with a wound-healing effect<sup>[15]</sup>.

### Conclusion

Pharmacological reviews will give valuable information which will assist the Siddha physician in getting more advanced knowledge about the scientific activities of ingredients of Bhavana panjankula thailam. Further clinical trials should be carried out to develop the scientific evidence for the uses of Bhavana panjankula thailam in treating the above-mentioned diseases.

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