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A comprehensive review of siddha therapeutic formulations for peptic ulcer disease (gunmam)

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Abstract

A peptic ulcer is defined as disruption of the mucosal integrity of the stomach and/or duodenum leading to a local defect or excavation due to active inflammation. Although burning epigastric pain exacerbated by fasting and improved with meals is a symptom complex associated with peptic ulcer disease, the majority of patients with peptic ulcers may be asymptomatic. Peptic ulcer significantly affects quality of life by impairing overall patient well-being and contributing substantially to work absenteeism. In symptomatic patients, the most common presenting symptoms are epigastric pain, which may be associated with dyspepsia, bloating, abdominal fullness, nausea, and averse to ingest the enough quantity of food because of bloating. These symptoms could be correlated with the disease "Gunmam" mentioned in Siddha texts.In this review, we discuss and highlight the latest evidence of complications related to peptic ulcer disease& their conventional treatments such as proton pump inhibitors and histamine-2 receptor antagonists and the adverse effects, relapses, and various drug interactions. On the other hand, medicinal plants, metal, mineral & animal products and their chemical compounds are useful in the prevention and treatment of numerous diseases. Hence, this review represents the information retrieval of common therapeutic sources like herbal, mineral, and animal formulations (either single or combined) for Gunmam and the general properties of herbs, metals & salts mentioned in the authenticated Siddha literatures. These possess more promising efficacy and having less of adverse drug reactions which is the need of hour for treatment of Gunmam.

Keywords: Gunmam, Peptic ulcer disease,Herbal drugs, Siddha Formulations, Kaarasaram(Salts).

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Introduction

Peptic ulcers result from the aggressive action of acid peptic juices. While most peptic ulcers occur in lower end of oesophagus, greater & lesser curvature of stomach, pyloric antrum, 1st & 2nd part of the duodenum. Moreover, an estimated 15,000 deaths per year occur as a consequence of complicated PUD. The financial impact of these common disorders has been substantial, with an estimated burden on direct and indirect health care costs of ~$6 billion per year in the United States, with $3 billion spent on hospitalizations, $2 billion on physician office visits, and $1 billion in decreased productivity and days lost from work [6].

Gastric Ulcers

Gastric ulcers are far less common than duodenal ulcers (ratio 1:4) and occur twice as often in males as in females.

Pathogenesis

Peptic ulceration arises from animbalance between the aggressive action of acid pepsin secretion and the normal defences (alkaline mucosa) of the gastro duodenal mucosa. Patients with gastric ulcers have a low to normal levels of gastric acid. A lowered gastric mucosal resistance to normal levels of gastric acid with consequent back diffusion of hydrogen ions is important in the pathogenesis of gastric ulcers. Gastric mucosal injury can be caused by: (i) H. pylori infection, (ii) non-steroidal anti-inflammatory drug (NSAID). In comparison to duodenal ulcer disease (nearly 100% association) the association of H. pylori and gastric ulcers is less striking - only 70 to 90 per cent of patients with gastric ulcers are infected with H. pylori. The H. pylori-induced chronic gastritis usually involves the body of the stomach in these patients, but sometimes, both body and antrum may be involved.

Clinical course Patients with gastric ulcers complain of burning epigastric pain that begins soon after meals, usually within 30 minutes. The pain is aggravated by eating and is relieved with antacids. Weight loss is not uncommon in gastric ulcer patients due to self-imposed dietary restrictions.

Duodenal Ulcers

Duodenal ulcer is the most common type of peptic ulceration and is four times more prevalent than gastric ulcer. It is more common in males than in females (ratio, 3:1).The injurious effect of excessive acid and pepsin on the duodenal mucosa plays a major role in the development of duodenal ulcers. Patients generally secrete excess acid and pepsin, and have a higher mean basal acid output (BAO) and maximal acid output (MAO) than normal controls or patients with gastric ulcers. These patients also have a prolonged and exaggerated hypergastrinaemic response after meals. Although they generally have only mildly elevated basal serum gastrin levels, the hyperchlorhydria in these patients is due to both an increased parietal cell mass and a higher than normal sensitivity to gastrin.H. pylori infection perhaps plays a pivotal, if not primary, role in the development of duodenal ulcers. Clinical evidence also indicates that the pathogenesis of duodenal ulcers is a multifactorial event and those additional factors, e.g. psychological (type A personality, occupational stress), genetic (blood group) and environmental factors (e.g. effects of smoking, alcohol, diet, etc.) also modulate the duodenal ulcer diathesis.

Duodenal ulcers produce burning epigastric pain appearing 90 minutes to three hours after intake of food. It is classically relieved by food, antacids and vomiting [1-4].

Up-to-date Incidence & Prevalence [5, 6, 7]

Worldwide:

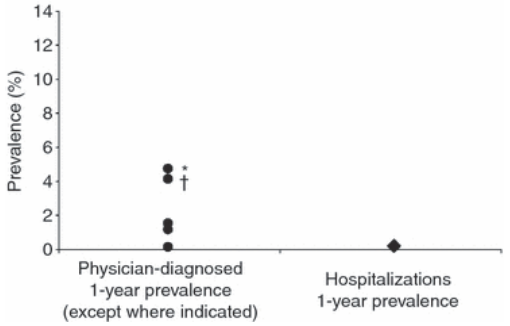
Globally, the prevalence cases of peptic ulcer disease increased from 6434103 (95% uncertainty interval 5405963 to 7627971) in 1990 to 8090476 (6794576 to 9584000) in 2019. However, the age-standardized prevalence rate decreased from 143.4 (120.5 to 170.2) per 100000 population in 1990 to 99.4 (83.9 to 117.5) per 100000 population in 2019. Moreover, the age-standardized mortality rate decreased by 59.4% (55.3 to 63.1) and the DALYs rate fell by 60.6% (56.8 to 63.9) from 1990 to 2019. Across SDI quintiles, low-middle and low SDI quintiles had the highest age-standardized prevalence, mortality and DALYs rates from 1990 to 2019.

Amongst 4188 abstracts screened, 178 full-text articles were identified and 18 incidence studies were retrieved: 14 from Europe, 2 from Asia, and 2 from North America. The highest annual incidence of all PUD (complicated and uncomplicated) was 141.8 per 100,000 persons in Spain, and the lowest was 23.9 in the UK. The highest annual incidence of bleeding PUD was 72.5 per 100,000 persons in Greece, and the lowest was 8.3 in the UK. The highest annual incidence of perforated PUD was 4.4 per 100,000 persons in South Korea, and the lowest was 2.2 in the UK.

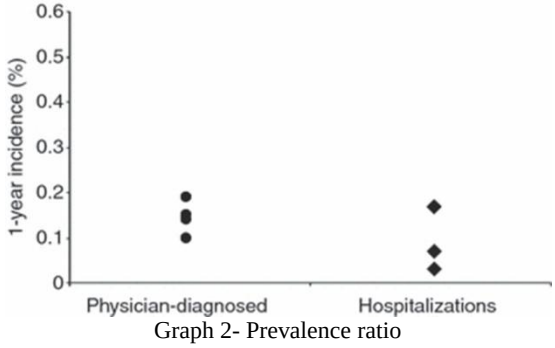
The prevalence rate in western countries is approximately 15%–20% [2, 3]. In the general population, PUD is believed to affect roughly 5%–10% of people [4].

India

According to an epidemiology study, PUD has a prevalence of 7.8% in India.[5] The annual incidence of PUD that needs treatment ranges from 0.10% to 0.19%.[6]The majority of studies reported a decrease in the incidence or prevalence of PUD over timeannual incidence ranging from 0.10% to 0.19% for physician-diagnosed PUD and from 0.03% to 0.17% for PUD diagnosed during hospitalization. The 1-year prevalence of physician diagnosed PUD was 0.12–1.5%, and the 1-year prevalence of PUD diagnosed during hospitalizations was 0.10–0.19%.



Graph 1- Incidence ratio



Graph 2- Prevalence ratio

Pathogenesis of Peptic Ulcer

Fig 1 Schematic presentation of main pathophysiological mechanisms involved in the development of peptic ulcer disease, and the sites of action of the most commonly used pharmacological options in the treatment of peptic ulcer disease. CCK2= Cholecystokinin Receptor; PGE2 = Prostaglandin E2; PGI2 = Prostaglandin I2; EP3 = Prostaglandin E receptor 3; HIST = Histamine.

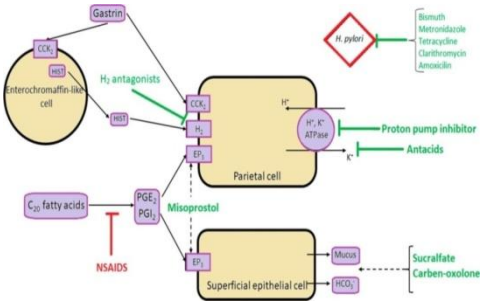


Fig 1 Pathogenesis of PUD

Signs and symptoms

Anorexia, Frequent belching & Regurgitation, Severe gripping pain with burning sensation in the epigastric region, Heart burn, dyspepsia, Abdominal discomfort, Nausea and vomiting, nocturnal & hunger pain aggravated by meals, abdominal pain relieved by vomiting, excessive thirst, Flatulence with diarrhoea, Bloody/ dark stools, Headache, Loss of body weight. Higher peptic ulcer disease incidences have been found to be associated with male sex, smoking, and chronic medical conditions. Peptic ulcer disease has also been found to be associated with increasing age [8].

Timely diagnosis and treatment of peptic ulcer disease and its squeal are crucial in order to minimize associated morbidity and mortality, as is prevention of peptic ulcer disease among patients at high risk, including those infected with H. pylori and users of NSAIDs [8-16].

Complications

PUD consequences such as bleeding, perforation, and blockage continue to be a cause of considerable number of hospitalizations. The use of Helicobacter pylori eradication medicines and proton pump inhibitors has greatly reduced the prevalence and relapse rate of PUD. Evidence has emerged in recent years that 8 weeks or longer use of proton pump inhibitors is connected to adverse drug reactions such as chronic hypergastrinemia with rebound gastric acid hyper secretion, gastric atrophy, and chronic hypochlorhydria.[7] The rising frequency of antibiotic resistance is another barrier to effective management of PUD caused by H. pylori infection

Table 02 Mechanisms of action and adverse effects of the most commonly used Anti-ulcer treatment options [9].

Medicine		Mechanism of action	Adverse effects
Proton pump inhibitors(PPIs)	Omeprazole Lansoprazole Esomeprazole Pantoprazole	Inhibition of the gastric H+ /K+ - ATPase(proton pump)	Headache, abdominal pain, diarrhea, nausea, vomiting, constipation, flatulence, vitamin B12 deficiency, osteoporosis
H2 Receptor blockers	Cimetidine Famotidine Nizatidin Ranitidine	Blocking the action of histamine at the histamine H2 receptors of parietal cells	Headache, anxiety, depression, dizziness, cardiovascular events, thrombocytopenia
Antacids	Aluminium hydroxide Magnesium hydroxide	Increase gastric pH to greater than four, and inhibits the proteolytic activity of pepsin Causes osmotic retention of fluid	Frequency not defined : Nausea, vomiting chalky taste, abdominal cramping, diarrhea, electrolyte imbalance
Potassium-Competitive Acid Blocker Cytoprotective Agents	Vonoprazan Misoprostol Sucralfate	Inhibits H+ /K+ - ATPase in gastric parietal cells at the final stage of the acid secretory pathway Stimulate mucus production and enhance blood flow throughout the lining of the gastrointestinal tract	Nasopharyngitis, fall, contusion, diarrhea, URT inflammation, eczema, constipation, back pain, diarrhea, abdominal pain, headache, constipation.

To compensate & overcome these adverse effects many literary evidences of safe and effectiveSiddha formulations are available in clinical practice and published clinical trials, Siddha interventions have shown encouraging benefits in the management of PUD. However, in order to determine the degree and gaps in the available evidences on the safety and efficacy of Siddha care for PUD, a thorough review of relevant clinical studies is required. Therefore, this work is important in providing the requisite database in view of future recommendations for the management of PUD. Henceforth, this systematic review will examine and summarize the available data supporting the efficacy and safety of Siddha interventions for PUD management. In this Clinical Update, we review the epidemiology and management of peptic ulcer disease to guide prompt diagnosis and appropriate treatment [8-16].

Methodology

Study Design

Literary review from Siddha classics of diseases having symptoms similar to Peptic ulcer disease were done

Place and Duration of Study

Government Siddha Medical College library (Dr. B.R.Ambedkar), Chennai

The therapeutic formulations retrieved from the authenticated Siddha literatures as follows,

1. Agathiyar amutha kalai gnanam-1200
2. Agasthiyar chendooram-300
3. Agasthiyar Mani 4000 ennum Vaithya Sinthamani Venpa
4. Agathiyar Pari Puranam
5. Agathiya vaithiya kaviyam-1500
6. Aathmaratchamirtham vaithiya saara sangeeraham
7. Anubhoga vaidhya Navaneetham
8. Bogar Kurunthirattu-3000
9. Bogar Vaithiyam-700
10. Gunapadam Mooligai Vaguppu
11. Gunapadam Thathu Jeeva Vaguppu
12. Kannusamy Parambarai Vaithiyam
13. Koshayee anubogha vaidhya bramma ragasiyam
14. Pathinen Siddhargal Vaidya Sillarai Kovai, Part-2
15. Pulipaani vaithiyam-500
16. Sarabendrar vaithiya muraigal (Gunma roga sikichai)
17. Siddha Treatment Guidelines for Selected Diseases
18. Siddha Vaidhya Thirattu
19. Sikitcha Ratna Deepam ennum vaidiya nool
20. Thanvanthiri thylam-500
21. Theraiyar Maha Karisal
22. Theraiyar Karisal-300
23. Theraiyar thaila varga surukkam
24. Theraiyar vagadam
25. The Siddha Formulary of India
26. Veera maamunivar nasakanda venbha
27. Yugi Karisal-151

Statistical Analysis

Collected data were processed and statistically analysed by a simple statistical method using Microsoft Excel 2019.

Siddha Aspect of Gunmam

As a man who has bowel-clearance experiences ease and pleasure, so does a beastly glutton experience disease and pain?One that cures physical ailment is medicine One that cures psychological ailment is medicine One that prevents ailment is medicine and One that bestows immortality is medicine.

"Thodar Vatha banthamilathu Gunmam varathu"

Definition

A disease that affects mind and body, characterized by indigestion, heartburn, vomiting, weakness, emaciation, depression and causing gaseous formation, usually associated with abdominal discomfort or abnormalities like dyspepsia. It leads to suicidal tendency in severe and chronic pain.

The patient suffering from this disease will lean forward due to pain. Hence it is named as Gunmam.

Synonyms:

Gulmam

Accordingto SiddhasystemtheGunmamisclassifiedinto8types.

Types of Kunmam

1. Vaayu gunmam
2. Vaatha gunmam (Related to ectoderm)
3. Pitha gunmam (Related to bile, endoderm)
4. Eri gunmam (Related to gastritis)
5. Vali gunmam
6. Satthi gunmam (Related to more nausea)
7. Sanni gunmam (Related to tri-dosha)
8. Selashma gunmam (Related to phlegm, mesoderm, kapha)56

According to Siddha system the GunmamThere are many types of Gunmam described by various Siddhars in various literatures.

Siddhar's Classification Of Gunmam

Yugi Muni 8 Types

1. Vaayu gunmam
2. Vaatha gunmam
3. Pitha gunmam
4. Eri gunmam
5. Vali gunmam
6. Satthi gunmam
7. Sanni gunmam
8. Selashma gunmam

Thirumoolar 8 Types

1. Vaatha gunmam
2. Pitha gunmam
3. Sethuma gunmam
4. Eri gunmam
5. Soolai gunmam
6. Vali gunmam
7. Satthi gunmam
8. Sanni gunmam

Table 03 Gunmam Types with Symptoms

Sr No	Gunmam Types	Symptoms
1.	**Vaatha gunmam**	Abdominal pain, weight loss, inability to walk,constipation, malaise, tiredness, headache, xerostomia, blackening of body skin, hematemesis

2.	**Pitha gunmam**	Face turns yellow, irritation and mucous along with vomit, giddiness, weight loss, constipation, blood becomes impure and the body colour changes into yellow, thirstiness, hyperthermia, eye irritationand headache
3.	**Sethuma Gunmam**	Aversion of food, sadness accompanied reduction of body weight; body becomes pale, giddiness, sensation of burning on chest, trembling
4.	**Eri Gunmam**	There will be irritation after a few minutes having food, salivation of mouth will be more, head ache, stomach enlarges more, there will be sweating on the ciliary hairs of leg, weight loss
5.	**Vaayu Gunmam**	Indigestion, vomiting, weight loss, inability to walk, more sweating, stomach cramps, tiredness of leg, aversion of food, sensation of stomach gases roaming like a ball
6.	**Vali Gunmam**	Dyspepsia, weight loss, lack of confidence, insomnia, aversion of food, fever, pain at vertebra and wrist joint
7.	**Satthi Gunmam**	Vomit due to indigestion, giddiness, irritation of stomach, constipation, inability of stomach, constipation, inability to walk, loss of strength, malaise. veins emerges to the surface of skin
8.	**Sanni Gunmam**	Enlargement of stomach, giddiness, sensation of burning of chest, body becomes cold, faces will be hot, sensation of saltiness in mouth

Epidemiology

It is more common among adults and predominant in male than female. The disease is aggravated during Elavenil (early summer) and Muthuvenil (late summer) Palai (Arid tract), Neithal (coastal tract) and mullai (sylvan tract) reporetedly higher compared to other areas.

Siddha aetiology [17]

Intake of excessive hot substances and substances which produce belching. Intake of dietary items which are mixed with sands, bran, stone and dust. Drinking spring water, stagnant water and lime mixed water.Intake of excessive diets which are not easily digested. e.g coconut milk by getting angry, starvation and depression frequently.The disease caused for those who practice yoga by improper controlling of breath.

Co-morbid Conditions

Emaciation, Depression

Primary Kutram Affected

Vatham

Secondary Kutram Affected

Pitham/ Kabam

Siddha Pathogenesis

It is explained by aggravation of Vatham and later affects Kabam and Pitham.

Investigation

In seven udalthathukal, Saaram, Senneer, Oon, Kozhuppu get affected.

Envagai Thervu (Eight Fold System of Clinical Assessment)

I. Naadi - Vatham/ Pithavatham
II. Sparisam - Tenderness in epigastric region
III. Naa - Pallor/ Coated
IV. Niram – Normal
V. Mozhi - Low pitched
VI. Vizhi - Normal/ Pallor
VII. Malam - Constipation/ diarrhea/ bloody stools
VIII. Moothiram:
Neerkuri - Yellowish in colour, tamarind odour
Neikuri - Oil may spreads in the form of snake/ ring

Modern Medical Investigations

Complete blood count
Complete urine analysis
Ultrasound - whole abdomen
Endoscopy
ELISA test for Serum IgA and IgG antibodies to detect H.pylori

Diagnosis

Based on the clinical symptoms and laboratory investigations

Differential Diagnosis

Eraippai putru (Carcinoma of the stomach)
Kudarpidippu noi (Intestinal obstruction)
Ulcerative colitis
Cholelithiasis
Acute Coronary Syndrome

Pyloric stenosis

Referral criteria:

Melena, hematemesis, dyspnoea, abdominal distension, rigidity, Gastric perforation, Intestinal bleeding (Hemosiderosis/ Malena)

Treatment

Line of Treatment:

Kazhichal maruthuvam (Purgation)/ Vamana maruthuvam (Therapeutic emesis)

Ennai muzhukku (Oleation)

Internal medicine

Siddhar yoga maruthuvam

Varmam maruthuvam

Dietary advice

To Be Added

Rice porridge, Double boil porridge, Tender coconut water, Coconut milk, Black gram

Tender vegetables

Avarai (Dolichos lablab), Kathari (Solanum melongena), Atthi (Ficus racemosa), Murungai (Moringa oleifera), Vendai (Abelmoschus esculentus), Peerku (Luffa acutangula), Mullangi (Rhaphanus sativus), Sundai (Solanum torvum), Pahal (Memordica charantia), Karunai kizhangu (Colocasia antiquarum), Sambal poosani (Benincasa hispida) Pirandai (Cissus quadrangularis).

Greens

Manathakkalli (Solanum nigram), Kaiyaan (Eclipta prostrata), Ponnaganni (Alternanthera sessilis)

Pulses

Ulunthu (Phaseolus mungo).

Dairy products

Cow's milk, ghee, butter milk, goat's milk.

Non-vegetarian diets

Velladu (Capra hircus), Ayirai meen (Loach), Velleli (White rat).

Fruits

Madhulai (Punica granatum), Aththi (Ficus racemosa), Koiya (Psidium guajava), Tharpoosanai (Citrullus lanatus)

To be Avoided

Alcohol, Smoking, Oily foods, Hot, sour &spicy foods, Tin foods and drinks, Tea /coffee, Dry fish, Chicken (Gallus gallus domesticus), Sodium rich foods, Sarkarai valli kizhangu (Ipomoea batatus), Seppankizhangu (Colacasia esculanta), Kothavarai (Cyamopsis tetragonoloba), Kollu (Macrotyloma uniflorum), Verkadalai (Arachis hypogea), Kaaramani (Vigna unguiculata), Pataani (Pisum sativum), Mochai (Lablab purpureus).Maintain food hygiene, avoid excessive anger, stress and depression, avoid fasting and take food at regular timings.

Emergence of Siddha Formulations to Treat Pud

Table 4: Herbal, poly-herbal, mineral, herbo-mineral & herbo-animal formulations to treat PUD

Herbal Formulations		
Sr no	**Therapeutic Formulation**	**Dosage & Adjuvant**
	KUDINEER (DECOCTION)	
1.	Kunma kudori kudineer	30 ml [18]
2.	Mukkavelai ver kudineer	30ml [18]
3	Chenbaga pattai kudineer	30ml [18]
4	Vellaraguver kudineer	30ml [22]
5	Puliyampattai kudineer	30ml [22]
6	Veppampattai kudineer	30ml [22]
	SAARU (JUICE)	
1	Kalli ilai saaru	30ml[22]
2	Pei kommati saaru	30ml[22]
3	Vellai saaranai ilai saaru	30ml[22]
	CHOORANAM(MEDICATED POWDER)	
1	Saaranai ver chooranam	2 g bd with palm jiggery [22]
2	Yega mooligai chooranam	2 g bd with water [22]
POLY- HERBAL FORMULATIONS		
	KUDINEER (DECOCTION)	
1	Notchi paluthayam	10-20ml [22]
	CHOORANAM (MEDICATED POWDER)	
1	Malliyathi chooranam	10 -15 g twice a day with palm jiggery [24]
2	Maha aswaganthi chooranam	5 -10 g twice a day with ghee [25]
3	Vaarpathiyathi chooranam	5 -10 g twice a day with tender coconut water [24]
4	Akkini chooranam	5 g twice a day with ghee [24]
5	Inji chooranam	5 g twice a day with ghee [25]

6	Nilavagai chooranam	5-10g twice a day with lukewarm water [22]
	VADAGAM (LOZENGES)	
1	Pirandai vadagam	1-2 bd with water [26]
	ARISHTAM (FERMENTED LIQUIDS)	
1	Thiraksha arishtam	20-30 g bd [28]
	NEI (MEDICAL GHEE)	
1	Gunmathuku aivagai nei	5g bd [26]
2	Viyagiri kirutham	5 ml bd [28]
3	Panchakavya kirutham	10-15 ml bd [28]
4	Punarnavathi kirutham	10 ml od [22]
	RASAYANAM(DAINTIES)	
1	Narasinga rasayanam	10g bd [22]
	ILAGAM(ELECTUARY)	
1.	Musumusukai ilagam	5 g bd [24]
2.	Elumichai ilagam	5-10g bd [24]
	THAILAM (MEDICATED OIL-OLEATION)	
1	Sittramutti thailam	For external application [27]
2	Gunmathuku ennai	For external application [26]
3	Kaiyan thailam	For external application [21]
	KULIGAI(PILLS)	
1	Santhanathi kuligai	1 bd with milk [28]
	ARAK (DISTILLED EXTRACTS)	
1	Sanjeevi arak	30 ml bd [28]
	PARPAM (CALCINED OXIDE)	
1	Kalli parpam	1-5 g bd with Sombu theener [22]
MINERAL BASED FORMULATIONS		
	THAILAM(MEDICATED OIL)	
1	Kanthaga thailam	10-20 ml [28]
	THIRAVAGAM (DISTILLED EXTRACTS)	
1	Sanga thiravagam	5 to 10 drops [29]
	PATHANGAM(SUBLIMATES)	
1	Linga pathangam	30-60mg [29]
	CHENDOORAM(CALCINED RED OXIDE /SULPHIDES)	
1	Thurusu chendooram	100 to 150 mg with Thirikadagu chooranam [30]
2.	Agathiyar chendooram	100 to 150 mg with honey [30]
3	Kalamega naarayana chendooram	30 -130 mg with juice of Thuthuvalai [31]
4	Kauri cintamani cendooram	65-130 mg for 40 days with Thirikadugu thool [32]
	HERBOMINERAL FORMULATIONS	
	CHOORANAM(MEDICATED POWDER)	
1	Saamuthara chooranam	10-20g bd with ghee [25]
2	Nagarathi chooranam	5 -10 g bd with honey [24]
3	Manimanthirathi chooranam	5-10 g bd with lukewarm water [23]
4	Pachai karpoorathy chooranam	5 -10g bd with ghee [24]
5	Bairava chooranam	5-10g bd with honey [25]
6	Shanmuga chooranam	5-10g bd with ghee [25]
7	Kunma nivarthiku chooranam	2 g bd with honey [33]
8	Menilavana chooranam	5g bd with ghee [34]
9	Kanthaga chooranam	5-10g bd with butter [23]
	ENNAI(MEDICATED OIL)	
1.	Sithathi ennai	3-5 drops with sombu kudineer [20]
	MATHIRAI(PILLS)	
1.	Maga vasantha kusumaagara mathirai	1to 2 pills bd with water [20]
2.	Bojanakudori mathirai	1 to 2 pills bd with water [25]
3	Panja paana mathirai	1 to 2 pills bd with water [25]
4	Ajamosthataka mathirai	1 to 2 pills bd with water [25]
5.	Kodasuli mathirai	1 to 2 pills bd with water [22]
6.	Kukilathi mathirai	1 pill at early morning [22]
7.	Sithiramoolathi kuligai	1pill bd for 10 days [35]
8.	Meganatha kuligai	1-2 pills with chukka kudineer [36]

9.	Yemathandi kuligai	one pill twice a day [20]
10.	Soolai kudara kuligai	1 pill in the morning with ginger juice [20]
	KADUGU(FILTRATES)	
1.	Vachillavalli kadugu	6 gm od for 45 days [22]
	PAKKUVAM(PROCESSED MEDICINE)	
1.	Vazhuthunai pazha marunthu	10.4 g od in the morning with sesame oil [22]
2.	Artha naarisa pagam	10-30 g with bark juice of moringa [22]
	THIRAVAGAM(DISTILLED EXTRACTS)	
1	Maga thiravagam	1 to 3 drops with water[28]
	MEZHUGU(MEDICINAL WAX)	
1.	Nandhi mezhugu	100-500 mg with palm jiggery [20]
2.	Panchalavana mezhugu	1-5 g bd with palm jiggery [28]
3.	Mega sinthamani mezhugu	100 mg bd with palm jiggery [28]
4.	Thambira mezhugu	100mg bd with palm jaggery for 5-7 days [28]
5.	Nava uppu mezhugu	100-500mg with palm jiggery [20]
6.	Panchachutha mezhugu	50-100mg with leaf juice of pirandai [37]
	KUZHAMBU(MEDICINAL SEMI-SOLID MIXTURE)	
1.	Agasthiyar kulambu	65 mg with kumatipala charu [38]
2.	Kowsigar kulambu	125-500mg with Amanaku ney [20]
3.	Kumati kulambu	100mg with palm jiggery [32]
	CHENDOORAM (CALCINED RED OXIDE/SULPHIDES)	
l1	Velli chendooram	30-60 mg bd with lukewarm water [19]
2	Uppu chendooram	65-130 mg bd with lukewarm water [39]
3	Sivanar amirtham	100 -200 mg bd with inji chaaru [20]
4	Theebalinga chendooram	100-200mg bd mg with palm jiggery [24]
5	Thiriloga chendooram	300-500mg bd with honey [40]
	PARAPAM (CALCINED OXIDES)	
1	Thamira naga parpam	100-150 mg bd with butter [28]
2	Yeggu parpam	100-150 mg with Sesame infused water [19]
	KATTU (CONSOLIDATED FORM)	
1.	Navachara kattu	488mg with honey [28]
	CHUNNAM(CALCINATED COMPOUNDS)	
1	Pooneru chunnam	100-200 mg bd with Kaasinikeerai charu [24]
	KARPAM(ELIXIR COMPOUNDS)	
1.	Punga karpam	100-150 mg with bark juice of pungam pattai [26]
2.	Bavana kadukai	500mg 1before and after food chewable twice a day [22]
3.	Saaranai karpam	30 ml early morning od [22]
	HERBO ANIMAL FORMULATIONS	
	CHOORANAM (MEDICATED POWDER)	
1.	Poonaga chooranam	100-200 mg bd with butter [28]
2.	Seenthil chooranam	1-2 g bd with honey[41]
3.	Kukkudathi chooranam	1-2 g bd with honey [19]
	MATHIRAI(PILLS)	
1.	Kasthuri mathirai	1-2 pills bd [19]
	PATHANGAM(SUBLIMATES)	
1.	Sambirani poo pathangam	100mg with sanipaal [42]
	PARPAM(CALCINATED OXIDES)	
1.	Sangu parpam	100-200mgwith water [19]

Table 5: GENERAL PROPERTIES OF PLANTS, METALS, ALLOYS, SALTS, MINERAL &ANIMAL ORIGINSTO CURE APD

Sr no	**GENERAL PROPERTIES TO CURE APD**
	PLANT ORIGIN
1.	Vellai Saaranai (Trianthema decandra) [22]
2.	Mathulai (Punica granatum) [23]
3.	Ulunthu (Vigna mungo) [17]
2.	Kunma kudori (Polygonum barbatum) [17]
3.	Karunai kizhangu (Typhonium trilobatum) [22]
4.	Pirandai(Cissus quadrangularis) [22]

5.	Kollu (Macrotyloma uniflorum) [22]
6.	Vasambu (Acorus calamus) [22]
7.	Karunjeeragam (Nigella sativa) [22]
8.	Senbagam (Michalea chembaga) [19]
9.	Naai kadugu (Cleome viscosa) [22]
10.	Kummatikai (Citrullus colocynthis) [22]
11.	Puli vanji (Tamarindus indicus) [22]
12.	Naarathai (Citrus limonium) [23]
13.	Pirambi (Bacopa monieri) [23]
14.	Aamanakku (Ricinus communis)[23]
15.	Perungayam (Ferula asafoetida) [23]
16.	Naaivelai (Cleome viscosa) [22]
17.	Sathurakalli (Euphoria antiquorum) [22]
18.	Musumusukkai (Mukia madraspatana)[22]
19.	Thippili(Piper longum) [23]
20.	Serankottai(Semecarpus anacardium) [23]
21.	Nelli(Emblica officinalis) [23]
22.	Murungai(Moringa tinctoria) [23]
	METAL ORIGIN
1.	Iron (Ayam), Magnetic oxide of iron (Kaantham) Z=26, Fe [19]
2.	Lead (Karuvangam) Z=82,Pb [19]
3.	Copper (Sembu-Gunma kaalan) Z=29,Cu [43]
4.	Silver (Vellai) Z=49,Ag [19]
5.	Mercury (Rasam), its salts Calomel(Rasa karpooram), Hydragyrum perchloride(Veeram) Z=80, Hg [19]
6.	Sulphur(Kanthangam) Z= 16, S [19]
	ALLOYS
1.	Brass (Pithalai) alloy of Cu+ Zn[19]
	KAARASARAM (SALTS)
1.	Sodium chloride impure(Inthuppu –Rock salt) [19]
2.	Sea froth engendered by submarine fire (Kadal nurai) [19]
3.	Salts deposited on beds of rocks (Kallupu) [19]
4.	Sodium chloride(Kariuppu-Table salt) [19]
5.	A prepared salt (Satthi saaram) [19]
6.	Aluminous sulphate (Seenakaram) [19]
7.	Ammonium chloride(Navacharam) [19]
8.	Borneo camphor(Pachai karpooram) [19]
9.	Glass gall (Valaiyaluppu) [19]
10.	Borax, Sodium biborate(Vengaaram) [19]
11.	Potassium nitrate(Vediyuppu) [19]
	PRECIOUS STONES
1.	Cat's Eye, Agate(Vaidooriyam) [19]
	MINERALS (NATURAL SUBSTANCES)
1.	Zinc sulphate (Thutha nagam) [19]
	ANIMAL ORIGIN(JEEVAM)
1.	Coccus lacca(Kombarakku) [19]
2.	Squalus carcharius(Sura) [19]
3.	Crab(Kadal nandu) [19]
4.	Buttermilk(Pasu Moor)[19]

Table 6: Gunmam Types & its specific Formulations

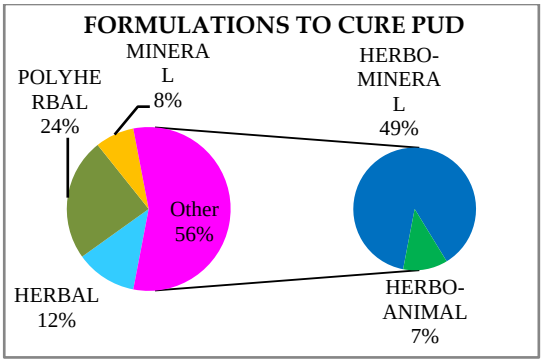
Sr no	GUNMAM TYPES & IT'S SPECIFIC FORMULATIONS
	VATHA GUNMAM
1.	Vayyuvuku chooranam [21]
2.	Aathiraathi thailam [21]
2.	Nava uppu mezhugu [21]
3.	Naga chendooram [19]
4.	Uppu chendooram [39]
5.	Sembu parpam [28]
6.	Palagarai parpam [19]
7.	Muthu parpam [19]
	PITHA GUNMAM
1.	Vilva ver kudineer [18]
2.	Narathai ilagam [21]
3.	Vilvathi ilagam [18]
4.	Inji pirandai ilagam [22]
5.	Rasa parpathi mathirai [21]
6.	Kowshikar kuzhambu [20]
7.	Rasa chendooram [19]
8.	Uppu chendooram [20]
9.	Muthu parpam with cold water [19]
10.	Kuzhambu parpam(kanda vidatham) with honey [19]
	KABHA GUNMAM
1.	Kunkunguma poo mathirai [21]
2.	Navaneetha parpam [19]

ERI GUNMAM
Inji chooranam [21]
Kowshikar kuzhambu [21]
Velli chendooram [21]
Arumuka chendooram [21]
Kaantha parpam [19]

VAAYU GUNMAM
Kowshikar kuzhambu [20]
VALI GUNMAM
Gunma kudori ilagam [21]
Sanjeevi mathirai [21]
Rasa parpathi mathirai [22]
Nava uppu mezhugu [21]
Aya veera chendooram [20]
Kal uppu chunnam [21]
SATTHI GUNMAM
Gunma kudori ilagam [20]
Siththathi ennai [21]
Kowshikar kuzhambu [21]
Pavazha chendooram [19]
Vanga chendooram [19]
Naga parpam [19]

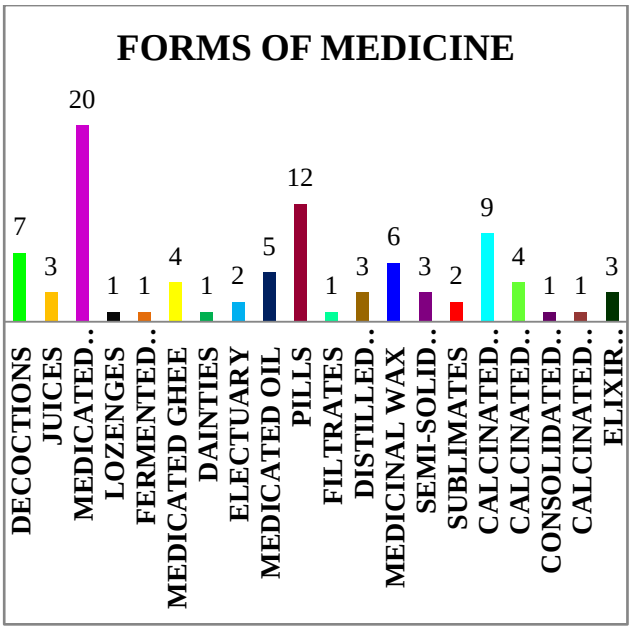
Results & Discussion

Totally 138 formulations were retrieved from the authenticated siddha literatures out of these 134 formulations were indicated for internal usage rest of the 4 formulations were indicated externally.



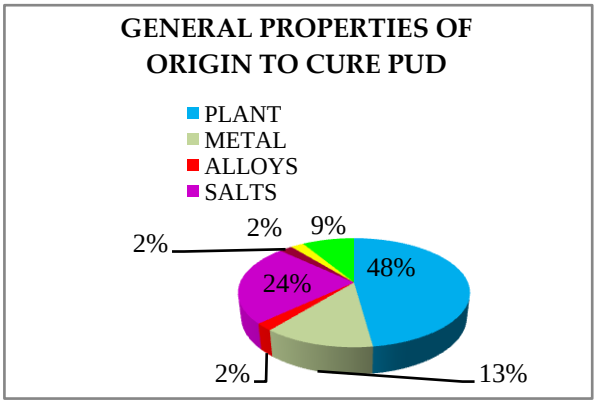
Graph 3 Formulations to cure PUD

Amongthe medicinal formulations obtained 12% were Herbal, 24% were poly-herbal, 8% were minerals, 49% were herbo-mineral formulations and 6% were found to be herbo-animal preparations.



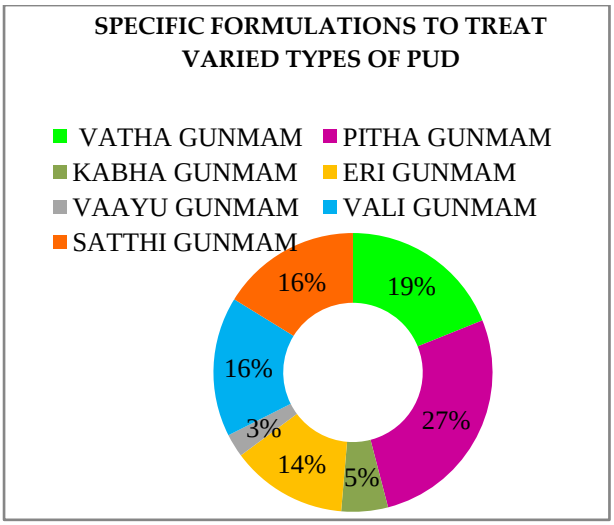
Graph 4 Forms of medicine

Amongst the PUD formulations the forms of medicine falls into kudineer (decoctions) are 7%, saru (juice) of 3%, chooranam(medicated powder) of 20%, vadagam(lozenges) of 1%, arishtam (fermented liquids) of 1%, nei (medicated ghee) of 4%, rasayanam (dainities) of 1%, ilagam (electuary) of 2%, ennai(medicated oil) of 5%, mathirai (pills) of 12%, kadugu (filtrates) of 1%, theener (distilled exrtracts) of 3%, mezhugu (medicinal wax) of 6%, kuzhambu (medicinal semisolid mixture),pathangam (sublimates) of 2%, chendooram (calcinated red oxide/sulphide) of 9%, parpam (calcinated oxides) of 4%, kattu (non-combustible & consolidated form of combustible inorganic substance) of 1%, chunnam (calcinated compounds) of 1% and karpam (elixir or rejuvenating drugs) of 3% were collected.



Graph 5 General Properties of Origin to Cure PUD

Possession of ability in their general properties to cure PUD as follows, plant origin of 22%, metal 6%, alloys1%, salts of 11%, precious stones 1%, minerals 1%, animal kingdom 4% were found.



Graph 6 Specific formulations to treat varied types of PUD

On surfing of these authenticated siddha literatures up to my knowledge some number of formulations are indicated specifically to these varied types of Gunmam (PUD) are 19% of formulations for vaatha gunmam, 27% for pitha gunmam, 5% for kabha gunmam, 14% for Eri gunmam, 3% for vaayu gunmam, 16% for vali gunmam and 16% of formulations are mentioned for satthi gunmam.Observational studies and surveys among healthcare providers report that adherence to evidence based treatment guidelines is often poor. This results in inadequate treatment and overuse of PPIs. Increasingly, antibiotic resistance has affected the choice of eradication regimen for *Helicobacter pylori* infection, the main risk factor [1]. these review formulations henceforth aid in the step stone for providence of the better regimen.

Conclusion

The findings of this study will assist clinicians in patient care and will also provide inputs for future research to provide high-quality documented evidence on the efficacy and safety of Siddha interventions for their wider use in treatment strategies for Gunmam (PUD).

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