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A DRUG REVIEW ON POTENCY OF RAJAA AMIRTHADHI CHOORANAM, A HERBAL SIDDHA DRUG IN THE MANAGEMENT OF SANTHUVATHAM (OSTEOARTHRITIS)

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Abstract: The most prevalent type of arthritis is by far osteoarthritis (OA). It is a significant contributor to pain and impairment in the elderly and is closely linked to aging. The symptoms of osteoarthritis include expansion of the afflicted joints, subchondral osteosclerosis, the growth of osteophytes at the joint edge, and localized loss of articular cartilage. Although it can happen, inflammation is not a common occurrence. The distribution of joint involvement in osteoarthritis (OA) is typical, primarily affecting the hips, knees, hands' proximal and distal interphalangeal joints (DIP), neck, and lumbar spine. It has been projected that 45% of all persons will get knee OA and 25% will develop hip OA at some time in their lives. The prevalence of OA increases gradually with age. For a person over 50, the lifetime likelihood of requiring a total hip or knee replacement due to osteoarthritis is approximately 11% for women and 8% for men, even though some of these patients have no symptoms. With the exception of the hip, where men and women are equally afflicted, symptoms associated with OA are more common in women. A herbal composition makes up the RAC. According to Gunapadam Mooligai Vaguppu, the main indication for each constituent in this formulation is for Vatha illnesses. Additionally, the majority of the substances have pungent tastes (Kaippusuvai) and veppaveerium (hot potency), which balance and correct the disturbed validhosham. Thus, this combination works well for treating Santhu Vatham.

Keywords: osteoarthritis, Santhu Vatham, articular cartilage, Rajaa amirthadhi chooranam

Introduction

The most prevalent type of arthritis is by far osteoarthritis (OA). It is a significant contributor to pain and impairment in the elderly and is closely linked to aging. The symptoms of osteoarthritis include expansion of the afflicted joints, subchondral osteosclerosis, the growth of osteophytes at the joint edge, and localized loss of articular cartilage. Although it can happen, inflammation is not a common occurrence. ^[1].

The distribution of joint involvement in osteoarthritis (OA) is typical, primarily affecting the hips, knees, hands' proximal and distal interphalangeal joints (DIP), neck, and lumbar spine. It has been projected that 45% of all persons will get knee OA and 25% will develop hip OA at some time in their lives. The prevalence of OA increases gradually with age. For a person over 50, the lifetime likelihood of requiring a total hip or knee replacement due to osteoarthritis is approximately 11% for women and 8% for men, even though some of these patients have no symptoms. With the exception of the hip, where men and women are equally afflicted, symptoms associated with OA are more common in women. ^[2], ^[3].

Yugimuni divided diseases into 4448 categories in the Siddha system. Yugimuni listed eighty different varieties of Vatha sickness in the Yugi Vaidhiya Chinthamani book. Santhu Vatham is one of them, and according to contemporary science, the symptoms and indicators of this illness are linked to osteoarthritis (of the knee, hip, shoulder, and cervical joints). Raja Amirthadhi Chooranam (RAC), a Siddha formulation, is useful in managing OsteoArthritis (Santha Vatham). Aathmaratchamirtham, a Siddha textbook, describes this formulation as a sastric preparation. ^[4]

A herbal composition makes up the RAC. According to Gunapadam Mooligai Vaguppu, the main indication for each constituent in this formulation is for Vatha illnesses. Additionally, the majority of the substances have pungent tastes (Kaippusuvai) and veppaveerium (hot potency), which balance and correct the disturbed validhosham. Thus, this combination works well for treating Santhu Vatham. ^[5] (Table 1, 2 and 3)

MATERIALS AND METHODS

Table 1: Ingredients and purification of Raja amirdhadhichooranam [6]

S. NO	NAME OF THE PLANT	USED PART	WEIGHT	PURIFICATION
1.	<i>KARUNSEERAGAM</i> <i>Nigella sativa</i>	Seeds	1 palam (35 grams)	Clean and dry it
2.	<i>NARSEERAGAM</i> <i>Cuminum cyminum</i>	Fruit	1 palam (35 grams)	Soak it in lemon juice for three days. Dry it under shade and fry till.It reaches golden yellow colour.
3.	<i>THIPPILI</i> <i>Piper longum</i>	Fruit	1 palam (35 grams)	Soak in lemon juice for three hours and dry
4.	<i>THIPILOOLAM</i> <i>Piper longum</i>	Root	1 palam (35 grams)	Clean and dry it
5.	<i>KODIVELI</i> <i>Plumbago zeylanica. L</i>	Root	1 palam (35 grams)	Make a fine powder and boiled with milk for three hours and dry it
6.	<i>KIRAMBHU –</i> <i>Syzygium aromaticum</i>	Bud	1 palam (35 grams)	Clean and dry it
7.	Lavangapattai – <i>cinnamum verum</i>	Bark	1 palam (35 grams)	Clean and dry it
8.	<i>VAAL MILAGU –</i> <i>piper cubeba</i>	Fruit	1 palam (35 grams)	Soak in buttermilk for three days and dry it
9.	<i>KUNGUMA POO –</i> <i>Crocus sativus</i>	Stigma	1 palam (35 grams)	Clean and dry it
10.	<i>ATHIMATHURAM –</i> <i>Glycyrrhiza glabra</i>	Tuber	1 palam (35 grams)	Clean and dry it
11.	<i>KUROSANI OMAM –</i> <i>Hyoscyamus niger</i>	Seed	1 palam (35 grams)	Soak in limestone water and dry it
12.	<i>VAAIVIDANGAM –</i> <i>Embelia ribes</i>	Fruit	1 palam (35 grams)	Clean and dry it
13.	<i>VENDAHAAYAM –</i> <i>Trigonella foenumgraecum</i>	Seed	1 palam (35 grams)	Fried and dry it
14.	<i>SADAMAANJIL -</i> <i>Nardostachysjadamansi</i>	Root	1 palam (35 grams)	Clean and dry it
15.	<i>JATHIKKAI –</i> <i>Myristica fragrans</i>	Seed	1 palam (35 grams)	Soak it in rice water for three hours and dry it

16.	<i>JATHIPATHIRI – Myristica fragrans</i>	Mace	1 palam (35 grams)	Clean and dry it
17.	<i>YELAM – Elitaria cardamomum</i>	Fruit	1 palam (35 grams)	Soak in lemon juice for three hours and dry.
18.	<i>MANJITTI – Rubia cardifolia</i>	Root	1 palam (35 grams)	Clean and dry it
19.	<i>KADUGUROGINI – Picrihiza kurroa</i>	Root	1 palam (35 grams)	Clean and dry it
20.	<i>CITTRATHAI – Alpinia galangal.</i>	Rhizome	1 palam (35 grams)	Clean and dry it in a shadow place in night time
21.	<i>NILAVAGAI – Cassia senna</i>	Leaf	1 palam (35 grams)	Make a fine powder and boiled with for three hours and dry it
22.	Nattusarkarai – <i>Borassus flabellifer</i>		21Palam (735 grams)	

Method of preparation:

The above drugs will be made into fine powder and will be added in equal amounts of palm jaggery.

Treatment:

Drug	:	Raja amirdhathi Chooranam
Dosage	:	Thirikadi Alavu (1-2gm) Twice a day
Adjuvant	:	Warm water
Duration	:	48 days

Table 2: Organoleptic characters, actions and medicinal uses of ingredients of Raja Amirdhadhi

Chooranam: [7]

S.NO	NAME OF THE PLANT	ORGANOLEPTIC CHARACTERS	ACTIONS
1.	KARUNJEERAGAM	<ul style="list-style-type: none"> ● Taste - Bitter ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Emmenagogue ● Carminative ● Diuretic ● Stomachic
2.	NARSEERAGAM	<ul style="list-style-type: none"> ● Taste - Pungent, ● Sweet ● Character - Cool 	<ul style="list-style-type: none"> ● Stomachic ● Stimulant ● Astringent

		<ul style="list-style-type: none"> ● Division - Sweet 	<ul style="list-style-type: none"> ● Carminative
3.	THIPPILI	<ul style="list-style-type: none"> ● Taste - Pungent ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Carminative ● Stimulant ● Expectorant ● Antiseptic ● Febrifuge
4.	THIPPILIMOOLAM	<ul style="list-style-type: none"> ● Taste – Fresh (Sweet), Dry (Pungent) ● Character - Fresh(cool), Dry (Hot) ● Division - Fresh (Sweet), Dry (Pungent) 	<ul style="list-style-type: none"> ● Stomachic
5.	KODIVELI	<ul style="list-style-type: none"> ● Taste - Pungent ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Tonic ● Stomachic
6.	KIRAMBHU	<ul style="list-style-type: none"> ● Taste - Pungent ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Antispasmodic ● Carminative ● Stomachic
7.	LAVANGAPATTAI	<ul style="list-style-type: none"> ● Taste - Pungent, ● Sweet ● Character - Cool ● Division - Sweet 	<ul style="list-style-type: none"> ● Carminative ● Stimulant ● Aphrodisiac
8.	VAAL MILAGU	<ul style="list-style-type: none"> ● Taste - Pungent ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Stimulant ● Antidote ● Resolvent
9.	KUNGUMA POO	<ul style="list-style-type: none"> ● Taste - Bitter ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Stimulant ● Stomachic ● Anodyne ● Antispasmodic ● Emmenagogue
10.	ATHIMATHURAM	<ul style="list-style-type: none"> ● Taste - Sweet ● Character - Cool ● Division - Sweet 	<ul style="list-style-type: none"> ● Emollient ● Demulcent ● Mild Expectorant ● Laxative
11.	KUROSANI OMAM	<ul style="list-style-type: none"> ● Taste - Pungent ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Hypnotic ● Sedative ● Anodyne ● Antispasmodic ● Mild diuretic
12.	VAAIVIDANGAM	<ul style="list-style-type: none"> ● Taste - Sweet ● Character - Cool ● Division - Sweet 	<ul style="list-style-type: none"> ● Anthelmintic ● Carminative ● Stomachic ● Stimulant
13.	VENDAHAAYAM	<ul style="list-style-type: none"> ● Taste - Bitter 	<ul style="list-style-type: none"> ● Tonic

		<ul style="list-style-type: none"> ● Character - Cool ● Division - Pungent 	<ul style="list-style-type: none"> ● Astringent ● Carminative ● Demulcent ● Diuretic
14.	SADAMAANJIL	<ul style="list-style-type: none"> ● Taste - Pungent (dry root), ● Sweet (fresh root) ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Stimulant ● Antispasmodic ● Diuretic ● Expectorant
15.	JATHIKKAI	<ul style="list-style-type: none"> ● Taste - Pungent, Astringent ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Stimulant ● Carminative ● Aromatic ● Tonic
16.	JATHIPATHIRI	<ul style="list-style-type: none"> ● Taste - Pungent, Astringent ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Aphrodisiac ● Carminative ● Stimulant ● Hypnotic
17.	YELAM	<ul style="list-style-type: none"> ● Taste - Pungent ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Stimulant ● Carminative ● Stomachic
18.	MANJITTI	<ul style="list-style-type: none"> ● Taste - Bitter, Pungent ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Emmenagogue
19.	KADUGUROGINI	<ul style="list-style-type: none"> ● Taste - Bitter, Pungent ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Expectorant ● Febrifuge ● Stomachic
20.	CITTRATHAI	<ul style="list-style-type: none"> ● Taste - Pungent ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Expectorant ● Febrifuge ● Stomachic
21.	NILAVAGAI	<ul style="list-style-type: none"> ● Taste - Bitter ● Character - Hot ● Division - Pungent 	<ul style="list-style-type: none"> ● Purgative ● Laxative

Table 3: Pharmacological actions and phytochemical constituents of ingredients of Raja amirdhathi chooranam.

S.NO	NAME OF THE PLANT	PHARMACOLOGICAL ACTIONS	PHYTOCHEMICAL CONSTITUENTS
1.	KARUNSEERAGAM	<ul style="list-style-type: none"> ● Anti-diabetic activity ^[8] ● Antibacterial activity: ● Antimicrobial activity 	<ul style="list-style-type: none"> ● Alkaloids^[8] ● Flavonoids ● Saponins ● Tannins ● Sterols

2.	NARSEERAGAM	<ul style="list-style-type: none"> ● Anti-microbial activity ^[9] ● Ant diabetic activity ● Anticancer activity ● Antioxidant activity ● Anti-inflammatory activity ● Analgesic activity 	<ul style="list-style-type: none"> ● Alkaloid ^[9] ● Anthraquinone ● Coumarin ● Flavonoid ● Glycoside ● Protein and resin
3.	THIPPILI	<ul style="list-style-type: none"> ● Antimicrobial activity ^[10] ● Anti hyperlipidemic activity ● Anti oxidant activity ● Prodective myocardial ● Stimulant 	<ul style="list-style-type: none"> ● Piperine ^[10] ● Piper longumine ● Piplatin ● Piperlactum A and B ● Piperadione
4.	THIPPILIMOOLAM	<ul style="list-style-type: none"> ● Antifungal activity ^[10] ● Ant amoebic activity ● Antiasthmatic activity ● Anti-inflammatory activity 	<ul style="list-style-type: none"> ● Piperine ^[10] ● Protein ● Alkaloids ● Saponins ● Carbohydrates
5.	KODIVELI	<ul style="list-style-type: none"> ● Anti-plasmodial activity ^[11] ● Anti-oxidant activity ● Anti-inflammatory activity ● Antiarthritic activity ● Hepatoprotective activity 	<ul style="list-style-type: none"> ● Plumbagin (0.91%), 3-chloroplumbagin, 3,3,-biplumbagin, 12(3)-tetrahydro-3,3''-biplumbagin, plumbagic acid, plumbagic acid glucosidases^[11]
6.	KIRAMBHU	<ul style="list-style-type: none"> ● Analgesic activity ^[12] ● Antioxidant activity ● Anticancer activity ● Anti-inflammatory activity ● Antidepressant activity ● Antitumor activity 	<ul style="list-style-type: none"> ● Dried flower bud contain Beta – caryophyllene ^[12] ● Eugenol, Acetate ● Methylsalicylate ● N – Amylcarbinol, Benzyl alcohol ● Furfural, Furfury alcohol, Vanillin
7.	LAVANGAPATTAI	<ul style="list-style-type: none"> ● Anti mutagenic activity ^[13] ● Aphrodisiac activity ● Antimicrobial activity ● Anti oxidant activity ● Anti inflammatory activity 	<ul style="list-style-type: none"> ● Methanol ^[13] ● Vanillin ● crategolic acid ● Tannins ● Gallotannic acid and methyl salicylate ● Flavonoids eugenin
8.	VAAL MILAGU	<ul style="list-style-type: none"> ● Antipyretic and antimicrobial activity ^[14] 	<ul style="list-style-type: none"> ● Ethanol ^[14] ● Phosphorous

		<ul style="list-style-type: none"> ● Antiulcerogenic ● Antibacterial activity ● Hepatoprotective activity ● Nephroprotective activity 	<ul style="list-style-type: none"> ● Carbohydrates ● Proteins ● Glycosides ● Saponins, diterpenes, phenols
9.	KUNGUMA POO	<ul style="list-style-type: none"> ● Anticonvulsant activity ^[15] ● Anti-genotoxic activity ● Antihypertensive activity ● Anti-inflammatory activity 	<ul style="list-style-type: none"> ● Crocin-(responsible for the color) ^[15] ● Picrocrocin-(responsible for the bitter taste) ● Safranal- (responsible for odor and aroma) ● Zeaxanthin ● Lycopene
10.	ATHIMATHURAM	<ul style="list-style-type: none"> ● Antiviral Activity ^[16,17] ● Anti-inflammatory ● Antidiabetic Activity ● Antihyperlipidemic Activity ● Hypocholesterolaemic Activity 	<ul style="list-style-type: none"> ● Glycyrrhizin ^[16,17] ● 18β-glycyrrhizic acid ● Alkaloids, glycosides ● Carbohydrates, starches ● Phenolic compounds, flavonoids
11.	KUROSANI OMAM	<ul style="list-style-type: none"> ● Anticonvulsant activity ^[18] ● Antidiarrhoeal activity ● Bronchodialatory activity ● Antispasmodic activity 	<ul style="list-style-type: none"> ● 1 - hyoscyamine(alkaloid) ^[18] ● Atropine and scopolamine ● Hyoscyne and atropine ● Flavonoids(rutin, spiraeoside and 31etc)
12.	VAAIVIDANGAM	<ul style="list-style-type: none"> ● Antioxidant activity ^[19] ● Analgesic activity ● Antianxiety activity ● Antidiabetic activity 	<ul style="list-style-type: none"> ● quercitol, tannin, christembine, embelic acid, vilangin was isolated from the ripe fruit berries Embeliaribyl ester, Embeliol, Embelinol, Potassium embelate. ^[19]
13.	VENDA HAYAM	<ul style="list-style-type: none"> ● Immunomodulatory ^[20,21] Activity ● Antioxidant Activity ● Anticancer Activity ● Antidiabetic Activity ● Gastroprotective Activity 	<ul style="list-style-type: none"> ● Galactomannan (Endosperm of the seed) ^[20,21] ● Carbohydrates and sugar (young seeds)

			<ul style="list-style-type: none"> ● Amino acid, fatty acid, vitamins, and saponins (Mature seeds) ● Flavonoids
14.	SADAMAANJIL	<ul style="list-style-type: none"> ● Antioxidant activity ^[22,23] ● Anticonvulsant activity ● Hepatoprotective activity ● Cardio protective activity 	<ul style="list-style-type: none"> ● Alpha-patchoulene ^[22,23] ● Angelicin ● Beta-eudesmol ● Beta-patchoulene ● Beta-sitosterol ● Calarene and calarenol
15.	JATHIKKAI	<ul style="list-style-type: none"> ● Anti-inflammatory activity ^[24] ● Anti-bacterial activity ● Anti-microbial activity ● Anti-fungal activity ● Hypoglycemic and antidiabetic activity 	<ul style="list-style-type: none"> ● Myristic acid ^[24] ● Alpha-pinene ● Terpenes ● Beta-pinene and trimyristin ● Camphene and limonene
16.	JATHIPATHIRI	<ul style="list-style-type: none"> ● Antimicrobial activity ^[25] ● Hypolipidaemic and hypocholesterolemic effect ● Antidepressant activity ● Antioxidant activity 	<ul style="list-style-type: none"> ● Alkaloids ^[25] ● Flavanoids ● Saponins ● Tannins ● Anthraquinones
17.	YELAM	<ul style="list-style-type: none"> ● Antioxidant activity ^[26] ● Anticancer activity ● Cytotoxic activity ● Antimicrobial and antibacterial activity 	<ul style="list-style-type: none"> ● Flavonoids (catechin, myricetin, quercetin and kaempferol) ^[26] ● Carotenoids (lutein and β-carotene) ● Carbohydrates ● Protein and Fat
18.	MANJITTI	<ul style="list-style-type: none"> ● Anti-Inflammatory Activity ^[27] ● Hepatoprotective Activity ● Antibacterial Activity ● Anti Diabetic Property ● Antioxidant Activity 	<ul style="list-style-type: none"> ● Gamma-aminobutyric acid (GABA) ^[27] ● Serotonin (5-HT) ● Pentylentetrazol (PTZ) ● Lithium-pilocarpine
19.	KADUGUROGINI	<ul style="list-style-type: none"> ● Antioxidant activity ^[28] ● Anti-inflammatory activity ● Immunomodulatory activity ● Hepatoprotective activity ● Anticholestatic activity 	<ul style="list-style-type: none"> ● Glycoside (Kutkin) ^[28] ● Picroside-I and II ● 2,2'- diphenyl-1-picrylhydrazyl (DPPH) ● 2,2'-azino-bis-(3-ethylbenzothiazoline-

			6-sulfonic acid) (ABTS)
20.	CITTRATHAI	<ul style="list-style-type: none"> ● Antioxidant activity ^[29] ● Antibacterial activity ● Anti-inflammatory activity ● Anticancer activity 	<ul style="list-style-type: none"> ● Tectochrysin ^[29] ● Apigenin ● Galangin ● Kaempferol ● Kaempferide
21.	NILAVAGAI	<ul style="list-style-type: none"> ● Anti malarial activity ^[30] ● Anti diabetic activity ● Hypotensive activity ● Antioxidant activity ● Laxative activity ● Anti-inflammatory activity ● Antidepressant activity 	<ul style="list-style-type: none"> ● polyphenols (anthraquinones, bianthraquinones, anthrone, flavonoids, isoflavonoids, phenolics, tannins) ^[30] ● alkaloids ● saponins, steroids
22.	NATTU SARKARAI	<ul style="list-style-type: none"> ● Analgesic activity ^[31,32,33] ● Antipyretic activity ● Anti-inflammatory activity ● Antioxidant activity ● Antimicrobial activity 	<ul style="list-style-type: none"> ● protein - 0.35%, fat (ether extraction) - 0.17%, minerals - 0.74%, carbohydrates - 90.60%, calcium - 0.06%, phosphorus - 0.06% and iron - 2.5 (mg/gm), nicotinic acid - 5.24 (mg/100 gm) ^[31,32,33]

CONCLUSION

The components of Rajaa amirthadhi chooranam are often used medications for the treatment of Vatha illnesses and osteoarthritis, according to a review of Siddha scriptures. The majority of components are discovered to have antioxidant, anti-inflammatory, analgesic, anti-microbial, immunomodulatory, and antidepressant properties in addition to their pharmacological activities, which are listed above. Thus, it may be concluded that the formulation will aid in Santhuvatham management. Thus further increases a drug's potency and effectiveness. The medication is readily available to construct a safer and more affordable treatment for Santhuvatham because of its demonstrated efficacy. This herbal Siddha formulation is explored with the use of statistical data analysis and additional clinical research.

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