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HYPOLIPIDAEMIC ACTIVITY OF THE SIDDHA MEDICINAL PLANTS

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ABSTRACT: Hyperlipidaemia ***(****Adhi dhoola noi)* is a well known metabolic disorder, prevalent in 30-40% of the people worldwide. It is one of the most important factors of morbidity and mortality related to atherosclerotic cardiovascular disease and diabetes. Research articles prove hyperlipidaemia as an important factor that determines the risk of atherosclerotic heart disease and endocrinal disorders. Siddha Medical system is one of the ancient one in which medicinal plants contributes a vital role in the making of single and compound formulations. Siddha medicinal plants can play an important role in the reduction of hyperlipidemic state with proven evidence based research. This warrants introduction of Siddha medicinal plants in the treatment of hyperlipidaemia. This review article recites various polyherbal Siddha formulations and single herbs as a hypolipidaemic drugs with scientifically proven measures which are equally effective, safe to use, affordable and easily acceptable.

INTRODUCTION: Hyperlipidaemia is a disorder of lipid metabolism. This disorder manifests as elevation of plasma cholesterol, triglycerides (or) low HDL level or all of the above. Based on CARDIA (Coronary Artery Risk Development In Young Adults) study, which was conducted among 5000 young adults of age group 18-30 years with an increased Body Mass Index (BMI) are at a high risk of developing complications due to hyper-lipidaemia. Increased VLDL, LDL and total cholesterol levels and decreased HDL level renders more atherogenic blood vessels which could result in coronary insufficiency (or) ischemic heart disease.

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National cholesterol Education Program (NCEP) has mentioned about Detection, types, evaluation and management of hyperlipidaemia in adults in treatment panel ATP-III.[1]

Hyperlipidaemia results in metabolic syndrome which is characterized by obesity, Insulin resistance and endothelial cell dysfunction which ultimately ends in Hypertension, Diabetes (or) Stroke.[2] According to the World Health Organization (WHO) most of the world's population is dependent on traditional medicines. Siddha Literature has described the various usages of polyherbal formulations in hyperlipidemia. Even though there are variable Siddha formulations, this study mainly includes the use of *Venthamarai chooranam, Neerzhivu chooranam, Thiripala chooranam, Maruthampattai chooranam, Kariveppilai chooranam* in the treatment of hyperlipidaemia. It also enumerates the phyto

chemistry, parts to be used along with botanical and common names.[3, 4, 5]

This study provides a list of multi herbal formulations and comparisons of their efficacy and analysis of individual chemical constituents of various herbal formulations that could have a hyperlipidaemic lowering activity. There is a warning alarm mentioned by National commission of Macro economics and health (NCMH) in India has estimated that by 2015 approximately 52 million Indian patients will develop coronary artery disease; out of this about 23 millions will be less than 40 years of age.[6]

Siddha Medicinal Plants compared with that of Current research:

Siddha medicine is widely used in various diseases like Diabetes, Atherosclerosis, Rheumatoid arthritis etc. Siddha Medicines have been prepared as multi herbal formulations that have a hyperlipidaemic lowering activity since ages which reinforces the effectiveness of Siddha medicinal plants in hyperlipidaemia. Several medicinal plants have been proved to act through various mechanisms like Inhibition of Microsomal Triglyceride Transfer Protein (MTP), Acyl coenzyme A (COA) Cholesterolacyltransferase (ACAT), Diacyl glycerol and acyl transferase (DGAT) and farnesoid X receptors (FXR). Among various Siddha herbal formulations, *Venthamarai Chooranam (***Table 1),** *Madhumega Chooranam (***Table 2***), Thribala Chooranam* (**Table 3),** *Maruthampattai Chooranam (***Table 4),** *Karivepillai Chooranam* **(Table 5)** which are having multiple bioactive ingredients act as lowering the hyperlipidaemic state. Some of the interested medicinal plants are described based on the proven scientific studies.

TABLE1: INGREDIENTS OF *VENTHAMRAI CHOORANAM*

S. No	Botanical Name/Tamil name	Family	Part to be used	Important Alkaloids	Actions
1.	*Elettaria cardamomum (L) Maton* ELAM	Zingiberaceae	Fruit & Seed	Oleum, Cardamoni, Terpinol	Hypolipidaemia, Hypoglycemic[7, 8 .9]
2.	*Zingiber officinalis Roscoe* CHUKKU	Zingiberaceae	Rhizome	Zingiberneol, β-bisabolene, Gingerin, Oleoresin	Hypolipidaemia, Diabetic, Dyslipedemic, Antioxidant[10, 11]
3.	*Piper longum, Linn* THIPPLI	Piperaceae	Root & fruit	Piperine, Guniesine, Methyl Pluvitilo, Pipataline	Hypolipidaemia, Antioxidant, Cardiac Disease[13, 14]
4.	*Glycyrrhiza glabra, Linn* ATHIMADHURAM	Fabaceae	Root	Glycyrrbizin, Glycyrrhizinate	Hypolipidaemia, Hypoglycemic[15, 16]
5.	*Anethum graveolens Linn* SADAKUPPAI	Apiaceae	Leaves	Coumarin, Vitc, α-terpinene, Flavanoids, Steroids -Xanthome glucoside	Hypolipidaemia[17, 18]
6.	*Cuminum cyminum* CHEERAKAM	Apiaceae	Seed	Cuminaldehyde	Hypolipidaemia[19, 20]
7.	*Nelumbo nucifera Garten* THAMARAI	Nelumbonaceae	White flowers	Lupeol, β-Sitosterol, Nuciferine, N-Norarmeparine	Lipolytic, Cardiac Disease[21, 22, 23]

***Elettaria cardamomum* (L):**

Chaulhari .HS., *et al*.,[8] has mentioned in review article as Aqueous extract of *Elettaria cardamomum* (100 - 200mg / kg per oral) for 30 days has significantly decreased the level of Total cholesterol, Triglycerides, LDL - C, VLDL and has increased HDL -C Levels.

***Zingiber officinale*:**

Bhandhari, *et al*., [10] has reviewed that ethanolic extract of Ginger (200mg /kg) orally for 20 days produced significant reduction of blood sugar in diabetic rats and also reduction in lipid levels are noted.

***Piper longum*:**
Jin.Z., [13,14] *et al*., has reviewed that use of ethanolic extract of piper has reduced the cholesterol levels.

***Glycyrrhiza glabra*:**
Santhosh kumar Maurya *et al*.,[15] reviewed that ethanolic extract of Glycyrrhiza Glabra (100mg / kg / day) for 30 days has markedly reduced the lipids level.

***Antheum graveolens*:**
Iyer D *et al*.,[18] has previewed that Ethanolic extract of that plant reduces the cholesterol levels.

***Cuminium cyminum*:**
Vaibhav Srivasta *et al*., [19] revised that Ethanolic extract of the seeds given for 20 days has significantly lowered the lipid levels.

***Nelumbo nucifera*:**
Subhasini *et al*.,[22] has studied the effects of the plant in male wistar rats which has proved anti lipidaemic activity.

***Terminalia chebula*:**
Maruthappan *et al*.,[25]. 1.05mg, 1kg, 1Bw & 2.10mg / kg/ bw for 14 days given for atherogenic diet induced hyperlipidaemic rats has reduced the lipoprotein levels.

***Murraya Koenigii*:**
Khan BA., *et al*.,[27] has reviewed tha tethanolic Petroleum and chloroform leaf extract has markedly reduced the blood sugar and lipid levels.

***Phyllanthus emblica*:**
Arunab Bhattacharya *et al*., [32] has reviewed that methanol and water solvent extract (5 - 10mg / kg) for 7 days has inhibited lipid peroxidation.

TABLE 2: INGREDIENTS OF *MADHUMEGA CHOORANAM* (MMC)

S. No	Botanical name/ tamil name	Family	Parts to be used	Phytochemical constituents	Actions
1.	*Terminalia chebula (Retz)* KADUKKAI	Combretaceae	Fruit	Phenolic Compounds, punicalagin,Terflavin-A, Terchebulin Girin,	Antiobesity, Hypolipidaemia[24, 25]
2.	*Murraya koenigii (L)* KARIVEPPILAI	Rutaceae	Leaf	isomahanibine, Koenimbine, Koengicine	Hypolipidaemia, Hypoglycemic[26, 27]
3.	*Phyllanthus emblica (Linn) Gaertn* NELLIKAI	Euphorbiaceae	Fruit	Trigalloylglucose, phyllembic acid, terchebin	Hypolipidaemia, Antioxidants, Rich source of vit c[28, 29, 30]
4.	*Tinospora cordifolia (Willd)* SEENTHIL	Menispermaceae	Stem	Flavanoid, Diterpene-10 - - Hydroxy columbin, Tinosporidine	Hypolipidaemia, Antidiabetic, Anti oxidant[31, 32]
5.	*Syzygium cumini (L) S.Jambolanum (Lam)* NAAVAL	Myrtaceae	Bark, seed	Betalinic acid Kaempferol Isoquerlitrin	Hypolipidaemia, Anti diabetic, Antioxidant[33, 34]
6.	*Cyperus rotundus (Linn)*	Cyperaceae	Tuber	Flavonoid glucoside cypernel I, II Cypertundone	Hypolipidaemia, Antihypertensive[35, 36, 37]
7.	*Phyllanthus amarus, Schume Tnonn* KEEZHANELLI	Euphorbiaeaec	Whole plant	Ellagitannin- Phyllanthin D	Antidiabetic, Hypolipidaemic[38, 39]

***Tinospora cordifolia*:**
Veena sharma *et al*.,[33] has reviewed that petroleum and other plant extract in rats (200mg / kg for 28 days) produces a marked reduction in body weight.

***Syzygium cumin*:**
Sharma SB *et al*.,[34] has reviewed that Ethanolic seed extract of Cumini in diabetic rabits showed marked changes in lipoprotein.

***Cyprus rotundus*:**
Bambhole. VD *et al*.,[37] has reviewed that Aqueous and Alcoholic extract for 90 days showed. lipolytic action and it has mobilised fat in rats.

***Phyllanthus amarus*:**
A.K.K Khana.F *et al*.,[38] has reviewed tht plant extract (250mg 1kg/ weight) for 30 days in Triton Wistar Rat 1339 showed that it inhibits hepatin

cholesterol biosynthesis and increased faecal bile acid excretion and enhanced plasma lecithin (LCAT) and cholesterol acyl transferase.

***Terminalia chebula*:** Priya. F., *et al*.,[42] has reviewed that 250 - 500mg / kg powder given in Triton Wistar Rat 1339 showed that it reduces total cholesterol.

***Phyllanthus emblica*:**
Yokazawa.T., *et al*.,[43] has reviewed that (10 - 40mg/kg/bw) for 2 months reduces the hyperlipidaemia and has antioxidative actions.

TABLE 3: INGREDIENTS OF *THIRIPHALA CHOORANAM* (TPC)

S.no	Botanical name/ tamil name	Family	Parts to be used	Important Alkaloids	Actions
1.	*Terminalia chebula , Retz* KADUKKAI THOOL	Combretaceae	Fruit	Phenolic Compounds, punicalagin, Terflavin-A, Terchebulin	Hypolipidaemia, anti obesity[40,41,42]
2.	*Phyllanthus emblica, Linn* NELLIVATRAL	Euphorbiaceae	Fruit	Trigalloyl glucose, phyllembic acid, terachebin	Rich source of Vit c, antioxidant, hypolipidaemia[43]
3.	*Terminalia bellerica, Gaertn* THAANDRIKKAI THOOL	Combretaceae	Fruit	Belleric acid, Bellericoside, Gallic acid, ellagic acid, Mannitol	Hypolipidaemia[44,45,46]

***Terminalia bellerica*:**
B. Ahirwar., *et al*.,[45] has reviewed that Ethanolic extract of 200 - 250g in male adult albino rats for 45 days orally which showed marked reduction in lipoproteins.

***Terminalia arjuna*:**
Saravana Subramanian., *et al*., [48] has reviewed that Ethanol, Diethyl ether, Ethyl acetate extract 175 - 350mg/kg BW in Female albino mice, Male wistar rats has shown that it reduces hyperlipidaemia and anti oxidant.

Grossypium herbaceum:
C. Velmurugan., *et al*.,[49] has reviewed that ethanol extract of leaves (200mg / kg BW) has significantly reduced lipids levels in diabetes.

***Curcuma Longa*:**
P. Suresh Babu *et al*., [52] has reviewed that Aqueous and Alcoholic extract 100mg / kg/ bw one in 9 days for 2 weeks significantly reduces lipid levels in diabetes.

***Cosicinium fenestratum*:**
Shanmugam Manoharan, *et al*.,[54] has reviewed that Ethanolic extract of 300 mg / kg BW for 45 days / alloxan induced in wistar rats showed anti *hyperlipidaemic and anti glycemic activity*.

***Salacia reticulate*:**
Yoshikawa, *et al*., [56] has reviewed those polyphenel constituents with lipase inhibitory and lipolytic activities in rats.

TABLE 4: INGREDIENTS OF *MARUTHAM PATTAI CHOORANAM*

S.no	Botanical name/ tamil name	Family	Parts to be used	Alkaloids	Actions
1.	*Terminalia arjuna* Wight & Arn MARUDU	Combretaceae	Bark	Triterpene arjunolitin, Arjunolone, arjunetin, arjunic acid, Terminolitin	Cardiac disease, Hypolipidaemia[47,48]

TABLE 5: INGREDIENTS OF *KARIVEPPILAI CHOORANAM*

S.no	Botanical name/ tamil name	Family	Parts to be used	Important Alkaloids	Actions
1.	*Murraya koenigii (L)* KARIVEPPILAI	Rutaceae	leaf	Girin, isomahanibine, Koenimbine, Koengicine	Anti- diabetic Hypolipidemia, Anti Oxidant[26, 27]
2.	*Gossypium herbaceum (L)* PARUTTI	Malvaceae	Seed	Gossypin	Anti diabetic Hypolipidemia[49, 52]

3.	*Curcuma longa (L)* MANJAL	Zingiberaceae	Rhizome	Curcumin, β- turmenone, Demthoxy Curamin	Anti-oxidant Hypolipidemia[51,52, 53]
4.	*Cosicinium fenestratum (Gaertn)* MARAMANJAL	Menzspermaceae	Rhizome	Berlambine, Oxo-berberine, Stigmasterol	Anti-Oxidant Hypolipedemia[54]
5.	*Terminalia chebula* KADUKKAI	Combertaceae	Pericarp	Pinicalagin, Terflavin.A, Terchebuin	Anti-diabetic Hypolipedemia Cardio protective[40,41,42]
6.	*Terminalia bellirica* THANDRIKKAI	Combertaceae	Pericarp	Belleric acid, Mannitol	Hypolipidemia[44,45,46]
7.	*Emblica officinalis* NELLI MULLI	Euphorbiaceae	Pericarp	Trigalloyl glucose, Phyllembic acid	Antioxidant, Hypolipidaemia[46]
8.	*Salacia reticulata* KADAL AZHINGIL	Celestraceae	Root	Quinonemethide, Lenmbachol C, D, Pristimeria	Antidiabetic, Lipase inhibitory, Lipolytic[55, 56]

TABLE 6: LIST OF HYPOLIPIDAEMIC ACTIVITY OF SIDDHA MEDICINAL PLANTS

S.no	Botanical name/ Tamil name	Family	Part to be used	Important Alkaloids
1.	*Curcuma amada* (Roxb) MANGAI INJI	Zingiberaceae	Rhizome	β,d, Curcumene, d- Pinene, d-Camphor, β - d - curcumene, Phytosterol [57]
3.	*Myristica fragrans*. (Houtt) SAATHIKAI	Myresticeae	Fruit	Eugenol, Isoeugenol, Methy Eugenol, Myristicin, Trimyriticin [58]
4.	*Pueraria tuberosa (*Dc) NILA POOSANI	Papilionaceae	Root	Puerarin, Tuberostan cardiac glycoside [59]
5.	*Tinospora cordifolia (Wild)* SEENTHIL	Menispermaceae	Stem	Tino Cardifolin, Tinosporidine, Tino sporaside, Cleodane [60]
6.	*Caesalpinia bonduc (L)* (Roxb) Kalichikai	Caesalpiniaceae	Fruit, leaf	α, β and δ Caesalpins, Pentacyclic,Tri Terpenoid (+) Ononitd, Cephanone [61]
8.	*Allium cepa* (Linn) VENGAYAM	Alliaceae	Bulb	Quercetin, Cycloallin, Phenolic Acid [62]
9.	*Allium sativum* (Linn) VALLAI - PUNDU	Alliaceae	Bulb	Ajuene, Y - glutamyl peptides, F- gitonin, degalactotigonin [63]
10.	*Capparis decidua* (Forsk) SENGAM	Capparaceae	Bark, fruit	Capparilline, N- triacontanol, Capparisinine [64]
11.	*Cinnamomum Verum* (J.S.Presl) LAVANGA PATTAI	Lauraceae	Leaf	Eugenol, Lianlool, Benzaldehyde, Benzyl Cinnamaldehyde, Pinene, Cymene [65]
12.	*Commiphora mukkul (*Enzler) KUNGILYUM	Burseraceae	Resin	Resins, Z-Guggulusterone, E-Guggulusterone, Guggulsterol I-V [66]
13.	*Enicostema axillare (Lam)* VELLARUGU	Gentinaceae	Whole plant	Swertiamarin, Gentiamine, Swertisin 5-0, Glycosyle swertisin, Myristic acid [67]
14.	*Garcinia combogia (G)* KODUAM PUZHI	Clusiaceae	Fruit	(-) Hydroxycitric Acid, Tartaric acid.[68]
16.	*Saussurea lappa* (C.B.Clake) KOSTUM	Asteraceae	Root	Costunolide, dehydrocostus, Lactone [69]
17.	*Trigonella foenum & T.Gracenum* (Linn) VENDHAYAM	Papilionaceae	Seed	Graecunnins A-G, Trigofenosides, Gitogenin, C- trigonelline, Quercetin[70]
18.	*Coccinia grandis* (L) Voigt KOVAI	Curcurbitaceae	Leaves, fruit, root	Lupeol, cucurbitacin, β-sitosterol, β-carotene, Linoleic, Oleic acids [71]
19.	*Aloe vera* (L), Burm.F CHOTTU KATHALAI	Liliaceae	Leaves	Aloesone, aloesin, barbuloin, glycoside,β - barbaloin, iso-emodin[72]
20.	*Alpinia officinarum (*SW) PERARATHAI	Zingiberacae	Rhizome	Methyl cinnamate, cineol, caryophyllenol I,II [73].

22.	*Embelia Ribbes,* Burm. F VAIVILANGAM	Myrsinaceae	Fruit, seed	Embelin, Quercitol, vilangin,christembine[74]
23.	*Ocimum sanctum* (Linn) O.emeri canum (L) NALLA THULASI	Lamiaceae	Leaves	Stigmasterol, Volatile oil, Caryophyllene[75]
24.	*Medicago sativa* KUTHIVAI MAZAL	Lequminaceae	Leaves	Saponins, Phytosterols, Vitamins, Coumarins [76]
25.	*Ougenia oojeinensis* (Roxb) NARIVENGAIAM	Papilionaceae	Bark	Lupeol , Betulin, Homoferreirin, Ougenin[77]
27.	*Sesbania grandiflora (Poir)* AGATI	Papilionaceae	Leaves, flower, root	Oleanolic acid, Glucuronic acid[78]
28.	*Pterocarpus marsupium* (Roxb) VENGAI	Papilionaceae	Leaves, stem	Liquiritigenin, garbauzol, Glucosides, Aurane[79]
29.	*Achyranthes aspera*, (Linn) NAIYURUVI	Amaranthaceae	Leaves	Oleanolic acid, ecdysone, ecdysterone, achyranthine [80]
31.	*Linum usitatissimum* (Linn) ALISI VIRAI	Linaceae	Seed	Phenylpropanoid, glucoside, Linnsitamarin, linseed oil [81]
33.	*Capparis dedicua*, Forsk, Edgew SENGAM	Capparaceae	Fruit, bark	Capparine, Capparilline, n-petacosane, β – sitosterol[82]
34.	*Aconitum heterophyllum* (Wall) ADHIVIDAIYAM	Renanculaceae	Leaves, stem	3-0- β-D- glucopyranoside7 - 0 β- D- glucopyranosyl - (1 → 3), quercetin 3 - 0 - β-D glucopyrnoside - 7 - 0- (6E - Cafferyl)β-D (1→3) [83]
35.	*Dalbergia latifolia* (Roxb) ITTI	Papilionaceae	Bark	Methyl dalbergin , rotenoid, dalbinol [84]
37.	*Hibiscus Cannabinus* (Linn) PULICHHAI	Malvaceae	Leaves, seed	Isoquercitrin, Cannabiscitrin, myricetin, phosphonolipids [85]
38.	*Eclipta prostrata (L) Mant* KARISALAI	Asteraceae	Whole plant	Terthienyl aldehyde ecliptal, Nicotine, Triterpenoid [86]
39.	*Moringa oleifera* (Lam) KAATU MURANGAI	Moringaceae	Leaves, flower	Quercetin,3-Rhamnoglucoside, Kaempferol [87]
40.	*Elaeocarpus sphaericus* NATTU RUTHRATCHAM	Elaeocarpaceae	Fruit, leaves	(-) - Isoleae, Carpilline, Rudrakine, Fixed oil [88]
41.	*Momordica charantia* (Linn) REVAKAI	Cucurbitaceae	Fruit, leaf	acylglucosyl sterols [89]
43.	*Nardostachys jatamansi (Dc)* JATAMANJI	Valerianaceae	Rhizome	Jatamansone, Sequitepene, Angelicin, Jatamansin [90]
44.	*Coriandrum sativum .(*Linn) KOTHAMALLI	Apiaceae	Leaves, seed	Furoisocumarins, Coriandrin, Coriandrol, D.Mannitol [91]
45.	*Syzygium cumini (L), S. Jambolanum (Lam) C* NAVAL	Myrtaceae	Fruits, seed	Myrecetin - 3 - 0 glucoside, Robinoside, Isoquercetin, Anthocyanins [92]
46.	*Nigella sativa (Linn)* KARUNCHEERAGAM	Ranunculaceae	Seed	Dithymoquinone, Nigilline, Aarmacenine, Trans anetholic [93]
47.	*Semecarpus anacordium Linn* SHENKOTTAI	Anacardiaceae	Fruit	Bhilwanol, Binaringenin, Semecarpetin, Galluflavanone[94]
48.	*Acorus calamus . Linn* VASAMBU	Araceae	Rhizome	Callaminone, Isocalamendiol, Asarone - 3, β-asarone [95]
49.	*Cynodon dactylon (L) Pers* ARUGAMPULLU	Poaceae	Whole plant	Apigenin, Luceolin, Orientin, Vitexin[96]
50.	*Sesbania grandiflora (L) Poir* AGATI	Papilionaceae	Leaves, flower	Oleanolic acid, Galactose, Glucuronic acid, Cyanidin 3 – glucoside [97]
51.	*Luffa cylindrica (L) M.Roem L.Aegyptiaca Mill.* PIRKANKAI	Cucurbitaceae	Tender fruits	Saponins Lucyosides A, H, Cucurbitacin B [98]

52.	*Bauhinia purpureae. (Linn)* MANDARI	Caesalpiniaceae	Flower	Tannin, Isoquercitrin, Quercitrin, Chalcone glycoside [99]
55.	*Scorpia dulcis. (Linn)* SARKARAI VEMBU	Scrophulariaceae	Whole plant	Scoparic acid, Scopadulciol, Amellin, Root,.Mannitol [100]
56.	*Hibiscus sabdariffa (Linn)* PULICHAI KEERAI	Malvaceae	Leaves, seed	Citric acid, d - malic, Hibiscus acid, Gossypetin, Sabdaritrin [101]
57.	*Tribulus terrestris* NEERUNJIL	Zygophyllaceae	Whole plant	Diosgenin, giogenin, Chlorogenin, Tribuloside [102]
58.	*Macrotyloma uniflorum* KOLLU	Fabaceae	Seeds	Dolichin A and B [103]
59.	*Mukia maderaspatana (Linn)* MUSUMUSUKKAI	Curcurbitaceae	Leaves, Root	Umbelliferone, Xanthotoxol, Isopimpinellin, Scopoletin[104]
60.	*Aegle marmeolus, (Linn). Corr* VILVAM	Rutaceae	Whole plant	Psoralen, Xantho toxin, Scopoletin, Siummianine[105]
61.	*Tragia involucrata Linn.* CHENTHATTI	Euphorbiaceae	Root	Ethylbenzene, Limonene, Tragia Sapomine,[106]
62.	*Gymnema sylvestre (Retz) P.Br.Ex. Schult* SHIRUKURINJAN	Apocynaceae	Leaves	Gymnemasins A. D., Gymnimagenine, Gymnemic acid, Gypenosides II, Nonacosane.[107, 108]
63.	*Spermacoce hispida (Linn)* NATHAI CHURI	Rubiaceae	Seed	Isorhamnetin[109]
64.	*Ziziphus jujuba (L)* Gaertin ILLANTHAI	Rhamnaceae	Leaves	Jujuboside A, B., Jubanine A, B., Rutin, Ziziphin, Stephanine, Vit C

DISCUSSION AND CONCLUSION: Based on the Siddha literature and various review of the articles (**Table 6**), Siddha medicinal plants have been proven as beneficial role in the management of dyslipidaemia. It is also observed that *Madhumega Chooranam* is very much effective in Type 2 diabetes with hyperlipidaemia and *Venthamarai Chooranam* in hypertension with hyperlipidaemia. It is evident that from the above mentioned reviews, single herbal formulations have the same potency as that of the polyherbal formulations in controlling the hyperlipidaemic state.

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