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Review Article

Salacia Sps - A Potent Source of Herbal Drug for Antidiabetic and Antiobesity Ailments : A Detailed Treatise

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ABSTRACT

Medicinal plants are used since ancient times for treating several human ailments. *Salacia sps* belong to family Celastacea have prominent place in plant based medicine because it is used in management of diabetes and obesity. *Salacia sps* contain salacinol, katnanol, mangiferin are active principles which inhibit α-glucosidase enzyme and slow down the absorption of glucose in intestine . *Salacia* sps posess many therapeutic properties like antiobesity, antidiabetic etc. It is used as ingredient in functional food with availability of a range of formulation owing to its safety and assured efficacy. Extensive research is underway in several laboratories to unravel its therapeutic potentials. Further *Salacia* sps are facing ruthless exploitation leading to the danger of extinction, if not conserved. This review brings out scientific developments in understanding the potential of *Salacia sps* as a promising herbal drug, for the benefit of mankind.

Keywords: Medicinal plant, *Salacia* sps, antidiabetic, antiobesity

INTRODUCTION

From the ancient times medicinal plants are used to treat many disease like diabetic, obesity malaria, chronic fever, cold, cough, diarrhea , arthritis, skin diseases etc. diabetic become global disease before it was rich man disease restricted to western countries but presently it is found all over the world. Diabetes is chronic metabolic disorders that have an effect on human body in terms of physical, psychological and social health[1]. The prevalence of diabetes is anticipated to be up to 4.4% in 2030, and also the incidence was found to be high in China, USA and India. Chemical synthesis drugs are used in management of diabetic due to ill effect on human body .Medicinal herbs have been employed with in the treatment of diabetic mellitus. The ethno botanic information reports anti-diabetic property in nearly 1000 plants[2].

Salacia –a member of Celastacea family is one of the medicinal plants extensively used to treat numerous ailments viz. hypoglycemic, inflammation, hypolipidomic, diabetic etc[3]. *Salacia* is called 'Ponkoranti' in Ayurvedic. *Salacia* sps are widely distributed in Sri Lanka, India, China, Vietnam and Malaysia is used from thousands of years in ancient medicines notably for the treatment of polygenic syndrome[4,5]. *Salacia sps* hold a strong place among antidiabetic herbs and prominent ones being, *S. reticulate* and *S. oblonga* . It has been in use for control of diabetes through food supplement formulation in countries like India, Japan, China and Korea[6].

The Genus *Salacia* carries with it 422 sps[7] of them the potential sps namely *S. reticulate* is an endangered one in India[8] and hence needs protection and multiplication strategies for sustainable use as herbal drug. Some of the *Salacia* sps viz., *S. lehmbachii, S. fimbrisepala, S. mamba, S. oblonga, S. chinensis and S. miegei* also figure in the IUCN red list[9].

Ethnopharmacology of Salacia sps

The *Salacia* plant is also called *Saptchakra* in Ayurveda. The plant is additionally used as a remedy for Type 2-diabetes within the Siddha system of medication. The medicinal property is attributed to its intestinal α-glucosidase inhibitory activity. α-Glycosidase inhibitors retard the digestion and hence absorption of saccharides within the gut that stops the rise in glucose concentration. A potent natural α -glucosidase inhibitor known as kotalanol was isolated from *Salacia* which show an inhibitory activity against disaccharide than salacinol and acarbose[10]. Within the Ayurvedic system, roots and stems of *S. reticulata*, or *S. oblonga* are used for the treatment of rheumatism, gonorrhea, skin diseases, and notably as a particular remedy for early-stage polygenic disorder[11]. In Thailand, the stem of *S. chinensis is* historically used as anti diabetic drug and additionally as a laxative[12].

Beneficial effects

Antidiabetic effects

Karunayaka *et al.*,[13] observed reduction in blood aldohexose upon administration of extracts of *S. reticulate* , which persisted up to five hours , suggesting its anti diabetic potential. A study of hydro alcoholic extract of *S. reticulata* at the dose of 500mg/kg per orally, reduced the blood serum aldohexose level considerably, when compared to the management cluster in corticosteroid evoked hypoglycaemia model[14]. A water soluble fraction

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(25-100mg/Kg per orally) from roots and stems of *S.reticulata* powerfully restrained elevated blood serum aldohexose level with the administration of sucrose or malt sugar[15]. In a study with animal model of type II polygenic disease, magniferin an active ingredients of *Salacia* and its glucosides resulted in reduction in blood aldohexose levels at a dose of 30mg/Kg per os for 2 weeks. This treatment considerably improved hyperinsulenemia, evidently magniferin might decrease blood sugar by decreasing endocrine resistance as hypothesized by Ichiki *et al*.[16].

The *S.prenoides* of root bark tested against alloxan induced diabetic rats showed anti diabetic property[17]. Similarly alcoholic extract of roots of *S.macrosperma* in alloxan-diabetic rats, also exhibited antidiabetic activity[18]. The root bark of *S. oblonga* from chloroform eluted fraction of the petroleum ether extract showed hyperglycemic activity (60% and 76%, respectively) in albino rats[19].The antidiabetigenic activity of methanolic extract from the stem of *S. chinensis* showed its potent anti-hyperglycemic effect in sucrose or malt sugar loaded rats[12].

Yoshikawa *et al*.,[20] found that a water soluble fraction (25-100 mg /kg p.o) from the roots and stems of *S.reticulate*, powerfully restrained the elevation in rat's blood serum aldohexose levels, when administered with sucrose or malt sugar. Salaretin has been isolated from *S. reticulata* extract that effectively inhibits enzyme that catalyzes the breakdown of dietary starch to easy sugars; there by doubtlessly inhibiting starch digestion. Shimoda *et al*.,[21] investigated the result of aqueous extract from *S. reticulate* on postprandial sugar levels in rats and in humans, in a dose dependent administration. The extract powerfully restrained the activities of α- glucosidases. Its addition restrained the activity of alpha-amylase (Ic_{50} 35µg/ml) however not that of β – glucosidase. The relative inhibitory effects of *S. reticulata* extract against partially purified α - glucosidases from the rat small intestine was as follows: sucrose isomaltase (Ic_{50}- 15µg /ml); maltase (Ic_{50}- 7µg /mLl). KK –Ay mice subjected to an exercise program and treated with orally administered mangiferin (30mg/ml) for 2 weeks, showed higher lipoid profiles than mice subjected to the exercise program and receiving an identical placebo. Krishnakumar *et al*.,[3] have evaluated both antioxidant and anti diabetic activity employing a streptozotocin induced rats by oral administration of petroleum ether extract of *S.oblonga* at 250 mg/kg of body weight. *S.oblonga* extracts considerably prevented the streptozotocin-induced hyperglycaemia and hypoinsulinaemia. Further Sellamuthu *et al*.,[22] have reported an experiment on Streptozotocin induced Wistar strain male rats by oral administration of mangiferin (40mg/kg b.wt/day) and glibenclamide (600µg/ b.wt/day) to screen for carbohydrates metabolizing enzymes viz., Hexokinase, Lactate dehydrogenase and Pyruvate kinase. The antidiabetigenic activity of methanolic extract from the stem of *S.chinens* showed its potent anti-hyperglycemic result in oral sucrose or malt sugar loaded rats[12]. The *S. oblonga, S. reticulata* collected in India, Sri Lanka respectively were found to indicate symptom effects in oral sucrose and maltose-loaded rats and á-glucosidase repressing activities against disaccharidase, maltase and isomaltase[23,24] Giron *et al*.,[25] have studied the results of *S.oblonga* extract on aldohexose uptake in cell cultures of differentiated L6-myotubes and 3T3-adipocytes. According to them, mangiferin, the bioactive compound of the *S. oblonga* extract, increased the expression of GLUT4 aldohexose transporters and their translocation to the cell wall in L6-myocites and 3T3 adipocytes, there by stimulating aldohexose uptake by the cells. *S.oblonga* extract and mangiferin could exert antidiabetic drug impact by increasing aldohexose transporter 4-mediated aldohexose expression and translocation in muscle cells. These effects in all probability mediate through in dependent two pathways that are involving 5′-AMP activated macromolecule enzyme and peroxisome proliferated activated receptor-PPAR. According to Wolf and Weisbrode[26] the salacinol extract did not show any histopathological changes in male Sprague- Dawley rats. Petroleum ether extract of the root of S. *oblonga* was studied in STZ diabetic rats and antilipid peroxidative activity of constant was studied in the cardic tissue.

Koga *et al*.,[27] have recently studied the duct gland enzyme repressing (PLI) activity of leaf extracts (aqueous, 60 and 99.8 (v/v)% EtOH) of *S. reticulata* .

Anti obesity and cardiovascular effects vis a vis diabetic complications

The liquid extract of *kathala himbutu* (Local name for Salacia in Sri Lanka) roots has been reported to suppress weight gain and perirenal fat accumulation in male Sprague-Dawley rats which are administered a high fat diet[28]. It is been reported that its extract can decrease the fat accumulation and additionally will increase the O_2 consumption in mice[29]. Huang *et al*.,[30] investigated that chronic oral administration of the *S. oblonga* root extract reduced the internal organ triacylglycerol and carboxylic acid formation. Further the same group reported that the water extract of *S. oblonga* modulated the internal organ angiotensin II kind one receptor (AT1) expression in Zucker diabetic fatty rats. Yoshikawa *et al*.,[31] have reported that methanolic and hot water extracts of roots and stem of *S. reticulate* and isolated compounds have showed hepatoprotective and antioxidant activity once tested on CCl_4 treated rats. *S.reticulate* methanolic and hot water extracts considerably suppressed body fluid glutamic oxaloacetic transferase (GOT) and glutamic pyruvic transferase (GPT) at a dose of 400mg/kg. Li *et al*.,[32] observed the improvement of interstitial and perivascular fibrosis within the hearts in the Fat Zucker treated rats with the liquid extract of S. *oblonga*. The extract exhibited a postprandial glycemic activity and additionally improved the internal organ complications in this model. Akase *et al*.,[33] found that *S. reticulate* extract has exceptional potential to stop fat and associated metabolic disorders as well as metabolic syndromes. Li *et al*.,[32] demonstrate that a water extract containing mangiferin from the roots of *S. oblonga* improves cardiac fibrosis in type 2 diabetic animals. Inhibition of postprandial hyperglycaemia by *S. oblonga* was thought to play a vital role in facilitating the delay in onset

Table 1: Other biological activities related to *Salacia* plants

Biological activity	Extract type	Model system	Reference
Hypolipidemic activity	The powder extract of *S. oblanga*	White albino Wistar femal Rats aluminium (200 mg/kg and 400 mg/kg)	(45)
Anti-hypertriglyceridemic activity.	Aqueous root extract of *S.oblonga*	Laying hens (1gm/100gm SOR extract (w/w))	(46)
Antidiabetic and inhibitor activity	*S. reticulata* extracts of bark or core root	*In vitro* assay Wistar maleAlloxan (50mg/kg)	(47)
Antidiabetic activity	*S. oblonga* water extracts	Obese zucker Rats (100mg/kg)	(48)
Antidiabetic activity	*S.macrosperma roots extracts*	Rabbits and alloxon induced albino rats (200 mg/kg)	(49)
α-Glucosidase inhibition activity assay	*S. chinensis* whole plant extract	*In vitro* assay (100µg/ml)	50)
Antidiabetic Activity	Mehani (polyherbal Formulation)	Wistar strains of male albino rats 2gm/60Kg orally for 21 days)	(51)
Antioxidant and Antidiabetic Activity	*Salacia sps* plant extract	Male Wistar albino rats STZ induced diabetic rats. (300 mg/kg.bw) Nitric Oxide Radical Scavenging 100 – 500 microgram/ml	(52)
Determination of triglyceride content in liver	Aqueous-ethanolic extract of *Salacia oblonga* root;	Male Sprague-Dawley rats(5 or 20 mg/kg)	(53)
Anti-hyperglycemic activity	Methanolic extract of *Salacia fruticosa*	Wistar albino adult male rats (125 mg/kg and 250 mg/kg, p.o).	(54)
Antidiabetic Activity	Mangiferin isolation from aqueous solution of *S. chinensis* of root	Male adult Wistar rats(40mg/kg b.wt/day)	(55)

complications caused by polygenic disorder related to cardiovascular disease. Li *et al*.,[34] reported that *S. oblonga* root extract have antidiabetic and antiobesity property, it improves excess cardiac triglycerols accumulation and suppress the increase in cardiac fatty acid oxidation by decreasing fatty acid uptake in cardictissues, there by regulating cardiac PPAR-α-mediated transcription of fatty acid metabolic genes in diabetic and fat animals. Huang et *al*.,[35] studied the effect of chronic oral administration of the water extract of *S. oblonga* roots to Zucker diabetic fatty (ZDF) rats, a genetic model of type 2 polygenic disorder and fat, which resulted in lowered plasma acylglycerol and total steroid alcohol (TC) levels, raise in plasma lipoprotein levels and reduced the liver contents of acylglycerol, non-esterified fatty acids and the ratio of fatty droplets to total tissue. These results indicated that each *in vivo* and *in vitro* studies of activity of *S. oblonga* extract, functions as a PPAR-α matter, providing a possible mechanism for improvement of postprandial lipoidaemia and hepatic steatosis in polygenic disorder. Sikarwar et *al*.,[36] have reported the marked increase in total steroid alcohol, triglycerides, phospholipids, low density lipoproteins, and reduce in the level of good steroid alcohol carrying high density lipoproteins in body fluids of animals treated with triton and atherogenic diet. Treatment with *S. chinensis* root extract (500 mg/kg considerably attenuated the extent of steroid alcohol, triglycerides, phospholipids, lipoprotein and beta-lipoprotein as compared to hyperlipidemic management. There was a significant increase in high density lipoproteins as compared to control. Huang *et al*.,[37] demonstrated that *S. oblonga* extracts decreases internal organ hypertrophy in Zucker diabetic fatty rats,at least partly by inhibiting internal organ angiotensin-1 overexpression. These studies give insights into a potential cardio protective role of this traditional herb that supports additional clinical analysis in fat and diabetes-associated internal organ hypertrophy. Wolf *et al*.,[38] have investigated and reported that extract of *S. oblonga* on male Spargue Dawley rats indicated that there was no harmful result on blood hematology and histopathology estimation in intestinal α-glucosidase repressing activity. Flammang *et al*.,[39] studied on genotoxicity testing of a *S. oblonga* extract for analysis of blood sugar management exploitation customary tests counseled by America bureau for food ingredients and is reported as safe and may be administered in genotoxicity assays. Im *et al*.,[40] used the plant to treat diabetic patients in India and SriLanka. They concluded that mangiferin present in the *Kothala himbutu* (a local name for *Salacia sps* in SriLanka) regulated the gluconeogenic gene in the liver and may responsible for lowering the glucose level in diabetic rats. Sellamuthu *et al*.,[41] showed that mangiferin reduces hyperglycemia and associated oxidative complications in STZ-induced diabetic rats, reduce the aldohexose level, and enhanced antioxidants markers together with accelerator and non accelerator antioxidants dysfunction. They conjointly reveal that mangiferin encompasses protective effects against liver and urinary organ in STZ-induced diabetic experimental rats via decreasing the amount of oxidant markers and improvement in antioxidant systems.

Clinical trails

Jayawardena *et al.*,[42] have reported that Herbal tea containing *S. reticulata* given to the patients with kind

Table 2: List of patents based on *Salacia*

Title	Patent no	Inventors	Reference
Herbal formulation for Prevention and treatment of Diabetes and associated complications	US2011/0236488 A1	G.Geetha Krishnan	68
Triterpenoid compound for the Treatment of diabetes	US 5691386	Wayne D. Inman, Michael John Reed	69
Compound with α-glucosidase Inhibiting action and method for Producing the same	US 6,376,682 B1	Johoji Yamahara	70
Formulations of alpha-amylase inhibitors with alpha'glucosidase Inhibitors useful in the treatment of diabetic and obesity	US 7,553,502 B2	Ezio Bombardelli, Groppello cairoli, Paolo Morazzoni, Cesare Ponzone, Massimo Ronchi.	71
Composition for obesity treatment	US 8,420,131 B2	Smith Conrad Anton.	72
Novel substance having Alpha-glucosidase inhibiting activity and food containing the Same	US 2007/0037870 A1	Masanori Asada, Yuzo Kawahara, Shinichi Kitamura.	73
Agent for increasing blood adiponectin quantity	US 2010/0297268 A1	Fumitaka ueda	74
Herbal Formulation for the Prevention and management of diabetes mellitus and diabetic micro-vascular complications	US 20090214678 A1	Govind Prasad Dubey, ArunaAgarwal, NeersVyas, Victor G.Rajamanickam.	75
Methods for delaying progression of diabetes using salacia oblonga extract	WO 2011163183 A3	Pedrosa Jose Lopez, Martin Manuel Manzano, Cabrera Ricardo Rueda	76
A novel herbal formulation for the prevention and management of type-2 diabetes mellitus and vascular complications associated with diabetes	WO 2011158247 A1	Govind Prasad Dubey, Aruna Agarwal, Nirupama Dubey, Shipra Dubey, Rajesh Dubey, Samamtsan Mercy Deborah	77
Herbal formulation for the prevention and management of type-2 diabetes mellitus and vascular complications associated with diabetes	US2012 8,337,911	Govind Prasad Dubey, Aruna Agrawal, NirupamaDubey, Shipra Dubey,Rajesh Dubey ,Samamtsan Mercy Deborah	78
Body weight gain suppressing composition and food product comprising the same	US 2012/0276081 A1	Yuriko oda, fumitaka ueda .	79
Glycosidase inhibitors and methods of synthesizing same	US 6,455,573 B1	B. Mario Pinto, Blair D. Johnston, Ahmad Ghavami	80

II polygenic disorder diabetes mellitus as assessed by HbA1C, showed a statistically important fall in HbA1C compared to a rise in HbA1C with the placebo cluster, thereby demonstrating the efficacy of the tea as safe treatment for Type II polygenic disorder. A trial placebo-controlled study performed in Japan reported that glucose level is reduced considerably in humans with Type 2 polygenic disorder, receiving *S. reticulate* extract as a part of their diet, as compared to plain subjects receiving a matching placebo. In the disaccharide tolerance test conducted on human volunteers to be administered 200 mg po. *S .reticulate* extracts, five minutes before disaccharide loading of 50g, considerably suppressed postprandial hyperglycaemia and effectivelydemonstrated its antidiabetic property. The liquid extracts of Kothalahimbutu roots and stems are prevented and reduced postprandial hyper glycaemia the fasting plasma level of aldohexose . Flammang *et al*.,[39] clarify that *S. oblonga* holds potential as a natural methodology to mitigate the glucose response for patients with polygenic disorder by inhibiting the activity of intestinal α-glucosidase. Singh *et al*.,[43] studied the antidiabetic property of *S. chinensis* in diabetic CKD patients. The thirty stable diabetic CKD patients were randomised into two team; team A and B have fifteen patients each. Team A received 1gm *S. chinensis* two fold daily and team B placebo. They measured a kidney function: body fluid creatinine and creatinine clearance; markers of epithelial tissue dysfunction: Interleukin-6 and serum Homocysteine, and lipids profile were measured at baseline and through follow-up for half a year. They reveal that *S. chinensis* has lipid lowering properties, significantly reducing lipid levels. *S. chinensis* conjointly reduced homocysteine and IL-6 levels in diabetic CKD patients,

suggesting necessary role in modulating CKD risk factors in these patients. *S. chinensis* could also be given as drug within the diabetic patients because it controls post-prandial hyperglycaemia, treats obesity and modulates cardiac risk factors. Ofner *et al*.,[44] showed that *S. reticulata* with vitamin D3 had a potential to decrease weight and fat. They investigated in forty patient's consisting of 8 men (average age between 30-60 years) physically active, with a BMI 25-45. The patients were divided into 2 teams A and B, as per the weight, BMI and body composition; and administered one capsule (S. *reticulata* 20µg with Vit D3 1.6 µg corresponding to 64 IU). However B team took further an additional capsule at 3 times once after meals. A considerable decrease in body fat and weight within four weeks was observed (4.5% and 1.4% in B and A team respectively).

Formulations

Sivaprakasam *et al*.,[56] prepared a drug called "*Kadal*" for diabetes mellitus in Siddha system. It contains roots and bark of *S chinensis,* and triphala . Testing of *Kadal* for 25 type 2 Diabetic patients and the formulation showed antihyperglycemic effect.

Forumulation by name, "*Glycoscia*" was reportedly developed by three botanists in 2007[57] and utilized in the D'Adamo Clinic. It contain *S.oblonga* a root bark -300 mg, red sage root (*Savia miltiorrhiza*)-75mg, quercentin-50mg, Maitake mushroom (from *Grifola frondosa* mycelia) -50mg, trans-resveratrol-50 mg (from *Polygonum cuspidatum* root) and different ingredients conjointly used similar to vegetable polysaccharide, L-Leucine and silicon oxide. This drug was used to treat inflammation, hypoglycaemia and peripheral hormone sensitivity. Blood serum sterol and triglycerides; chronic complications of polygenic disorder similar to retinopathy, peripheral pathology and cataracts.

Faizal *et al*.,[58] have evaluated ayurvedic medication 'Rajanyamalakadi' (manufacture By Bipha Drug Laboratories). Every pill contains 500mg: *S. oblonga* -250 mg, *C. longa* -125 mg, *E. officinalis*-125 mg .given to the diabetic patients in a medical camp in the Ayurveda Hospital in Ernakulam. *Rajanyamalakadi* (500 mg) prescribe as a vital antidiabetic drug with hypolipidemic and inhibitor effects probably because of the presence of terpenoids or curcuminoids or polyphenols or flavonoids. Radha *et al*.,[59] developed a capsule called *Kadalazhinji* (contain 1 gm *S. reticulata* bark powder).They observed the treatment resulting in reduction in glucose ,glycosylated Hb, total steroid alcohol , cholesterol ,VLDL steroid alcohol and triglyceride levels as compare to control group B .They concluded that long term consumption *S. reticulate* may benefit the diabetic patients. Rajalakshmy *et al*.,[60] have studied the qualitative associated quantitative aspects of an opposing diabetic flavoring drug *Diajith. Diajith* is Ayurvedic formulation containg roots of *S reticulate*, rhizomes of *Curcuma longa*, fruits of *Tribulus terestris and Emblica officinalis*.They analysed 3 batches of the merchandise and did a phytochemical finger print profile as an attempt to standardrize protocol to formulation. Shivaprasad *et al*.,[61] developed a product referred to as SALCITAL-Plus at R&D center, Olive Bioscience Pvt Ltd Tumkur. Which contain a polyphenolics compounds like mangiferin. Oda *et al*.,[62] released a product called Metabarrier used as functional food to prevent diabetic and obesity in patients. Basha et al.,[51] formulated *mehani* which contains 5 ingredients *Salacia oblonga, Emblica officinale, Trigonella foenumgracum, Curcuma longa* and *Tinospora cardiofolia*.The mehani showed a good antidiabetic property.

Food ingredient formulations

The thin boundary between food and drugs has been exploited, and designer foods have recently emerged as big business in functional food markets[63]. Currently *Salacia* sps are extensively consumed in Japan and US and different countries as a food supplement for preventive and diabetics management[64] *S.oblonga* is has been used as food ingredient for several years for management of high glucose levels in India , Sri Lanka Japan and Korea,[6]. Nakata *et al*[65] showed that *Salacia* lipopolysaccharide tea not only reduced fasting plasma glucose level , but also effectively improved beta-lipoprotein values. Thus, it is anticipated that *Salacia* lipopolysaccharide tea are going to be used as a preventive food for lifestyle-related diseases, like polygenic disease, obesity, and dyslipidemia.

Balaji et al[66] prepared a formulation containing equal ratio of *Asparagus racemosus*, *Emblica officinalis, Salacia oblonga*, *Syzygium aromaticum*, and *Tinospora cordifolia.*they tested the formulation on type 2diabetic rats. They reveal that formulation had antidiadetic, antiobesity and antioxidant property due to phenolics and other secondary metabolites present in it. Sajeeth et al[67] demonstrated that polyherbal formulation ESF/AY/250 and ESF/AY/500 containing eight ingredients such as *Aerva lanata, Aegle marmelos,Ficus benghalensis,Catharanthus roseus, Bambusa arundinaceae, Salacia reticulate, Szygium cumini* and *Eruca sativa.* These formulation wre given to the *Streptozotocin* induced rats .This study reveled that ESF/AY/500 formulation has highest antidiabetic and antioxidant activity compared to ESF/AY/250 formulation because of higher dose.

CONCLUSION

Salacia sps have been used as plant based medicine for many diseases from ancient time in many countries like India, Japan, Sri Lanka, USA etc. To treat diabetic, obesity, malaria, cold, caught arthritis etc. *Salacia sps* contain several phytochemicals like Salacinol, katanol, mangiferin etc which exhibit beneficial effect as therapeutics. Especially, Salacinol and Katanol are used to treat hyperglycemia. Their administration reduces body weight by reducing calorie intake by inhibiting the α-glucosidase enzyme responsible for disassembling complex dietary carbohydrates, such as starch into glucosdase. This phenonomena would lead to reduction in the absorption of glucose in the intestine. Salacinol and Katanol have potential to become lead compounds due to their ability to up and down regulation of the gene in humans in specific disorders. They can also be considered in food ingredients and functional food formulations

offering significant desired benefits. It provides an opportunity to formulate value added herbal products through a range of formulations. Accordingly several herbal products are found in market with different brand names owing to it efficacy for the health benefits and also being safe to consume. The wealth of information on the health and medicinal properties of Salacia *sps* could lead to its utility as a potential herbal drug for many diseases. Thus opening the way for new class of hypoglycemic drug in near future. But recent problem is *Salacia sps* becoming endangered, deserves attention for conservation and propagation in a sustainable manner.

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