

## At A Glance On Kothala himbutu

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Kothala himbutu (*Salacia reticulata*; SR) is a very useful medicinal plant in Sri Lanka and the southern region of India. SR contains salacinol and kotalanol neosalacinol and neokotalanol which can be isolated from the *Salacia* species by using iron pair chromatography [1 & 2]. It is a woody climber and widely used in Ayurvedic medicine for diabetes and obesity treatment. Previously, the action of SR for diabetes is not described properly. Researchers tried to explore the effect of SR and found that it has an alpha glucosidase inhibitor activity in invitro study. Moreover, SR may increase lipolysis and reduce insulin resistance by enhancing mRNA expression for hormone sensitive lipase (HSL) and adiponectin [3].

It was reported that SR roots contain magniferin (MA), kotalanol, salacinol which has hypoglycemic properties primarily but later hypoglycemic properties can be seen in thiocyclitol compound also. MA in kothala himbutu extract directly acts on liver cell by regulating gluconeogenic fructose 1, 6- biphosphatase expression and downregulates the gluconeogenesis that results decrease the fasting blood glucose in mice [1 & 4].

The effect of hypoglycemic action can be produced not only by root extracts but also by leaves extract of SR. In normal and type I diabetic mice study for the effect of SR leaves extract, there was inhibition in post prandial plasma glucose rise as well as inhibition of intestinal alpha glucosidase by 1mg leaves extracts per mouse given together with sucrose or maltose. Moreover, it was found that 0.01% extract in drinking water supplement prevented the rise in plasma glucose and of intestinal alpha glucosidase action in these mice [4]. It was reported that SR extracts can decrease plasma glucose and insulin levels, decrease HbA1c with no adverse effects in human studies. The sub-chronic toxicity effect of SR extracts was studied in Sprague–Dawley rats by treating with 0, 10, 65, and 400 mg/kg body weight/day of the powder for 91 days. There was no adverse toxicity was observed [5].

Studies showed that SR extracts produce multiple effects by influencing aldose reductase, pancreatic lipase, peroxisomal proliferator-activated receptor- $\alpha$ , glucose transporter-4 mediated glucose uptake, and angiotensin II type 1 receptor. In addition to this, it can produce antioxidant, hepatoprotectant and free radical

scavenger effects. Moreover, SR extracts have beneficial effect on weight loss and reduce weight gain in animal study. Research was done in obese fa/fa male Wistar fatty rats, a model of type 2 diabetes mellitus to study the effect of aqueous extract of SR and cyclodextrin (SRCD) mixture on reduce weight gain, fat accumulation on visceral and total cholesterol level by giving diet containing 0.2% SRCD for 6 weeks. There was significantly lower in body weight gain, food intake, visceral fat mass, liver mass, liver triacylglycerol content of the rats as well as increase in the plasma total cholesterol and insulin concentrations were suppressed [6 & 7].

Researchers also showed that SR extract powder at a concentration of 1.0% or 3.0% can prevent obesity and associated metabolic disorders including the development of metabolic syndrome in Tsumura Suzuki Obese Diabetes (TSOD) mice [8]. SR contains many pharmacological compounds so it is difficult to fix the standard extract to study the weight reduction effect on human [9]. In one clinical trial study, there was significant weight and body fat reduction after 4 weeks period of taking a capsule containing of SR 200 mg and vitamin D3 64 IU (SRD) [10].

Hence, it may suggest that SR extracts will be valuable medicine for prevention and treatment of diabetes mellitus as well for obesity.

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