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HYPOLIPIDEMIC ACTIVITY OF THESPESIA POPULNEA FRUIT (AQUEOUS EXTRACT) IN THE MANAGEMENT OF OBESITY - AN OBSERVATIONAL CLINICAL STUDY

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ABSTRACT

The second most notable yet preventable disease after smoking in worldwide obesity; which is a chronic and progressive disorder resulting due to excessive adipose tissue accumulation primarily in abdomen. It can be measured by assessing the body mass index (BMI), which brings delineating effects on human psychology gradually. It also plays an important role in manifestation of other complications. In Ayurveda, Obesity is described as Sthoulya which is characterized by excessive Medodhatu (adipose tissue) deposition in the body. Present study was carried to find out the antiobesity and antihyperlipidemic activity of Paras Pipal (Thespesia populnea) fruit aqueous extract (Kwath) with honey. From this study, it can be concluded that aqueous extract of Thespesia populnea exhibited significant antiobesity and antihyperlipidemic effects.

KEYWORDS: Obesity, Sthoulya, Thespesia populnea, Paras pipal kwath.

INTRODUCTION

Obesity is a complex, multi-factorial and largely preventable disease.[1] It affects one third population of the whole world.[2,3] Obesity is typically defined quit simply as excess body weight for height, but this simple definition belies an etiologically complex phenotype primarily associated with excess adiposity, or body fatness, that can manifest metabolically and not just in terms of body size.[4] It is defined as having a body mass index (BMI) greater than or equal to 30 kg/m^2. Recent studies have reported that globally more than 1.9 billion adults are overweight ad 650 million are obese.[5] In Indian scenario about 135 million individual were affected by obesity, it varies from rural to urban and state wise.[6] According to NCD in year 2018, obesity in south India were higher (27.2%) followed by north India (i.e.23.8%) and lowest in west India (i.e. 15%). Prevalence of obesity in Chhattisgarh in year 2015-16 reported that female (11.9%) were obese then male (10.2%).[7,8]

Obesity commonly leads to a risk of developing various life-threatening diseases, including diabetes, cardiovascular problems, hyperlipidemia, hypertension, non-alcoholic fatty liver, and certain cancers.[9,10,11] In Ayurveda obesity and hyperlipidemia are correlated with Sthoulya and Medoroga respectively.[12]

In Charak Samhita it's been delineate as Medoroga a sickness of the fat tissue resulting in hugeness (sthoulyam).[13] In written material, Atisthaulya (Obesity) is delineate as excessive accumulation of Meda (fat/adipose tissue) and Mamsa (flesh/muscle tissue) resulting in limpness of hips, abdomen, and breast. In written material it's thought of united of Santarpanottha Vikaras (disease because of consumption of excessive calories).[14] Medodushti (disorders of fat metabolism) could also be one amongst the chance factors for ischaemic heart condition (IHD). The most symptoms of fleshiness are AtiShevida (Excessive Sweating), Shramjanya Swasa (Breathlessness on gentle exertion), Aati Nindra (Excessive sleep), Karya Dorblyta (Difficulty to perform significant work), Jadyatha (Stuggishness) Alpaayu (Short life span), Alpabala (Decreased bony strength),Utsahahni (Inertness), Sharir Durgandhta (Foul odour of the body) Gadgadtava (Unclear voice) Kshudhavridhi (Excessive hunger) and AtiTrishna (Excessive thirst).[15,16]

Obesity could also be a result factors like heredity, atmosphere or food and life designs, however it's tough to make a decision the involvement of factor. It's impossible to alter heredity, it's tough to alter atmosphere, however comparatively straightforward to alter food

habits and life designs. fat are often cured and prevented with the holistic approach of written material.[17]

As per Acharya Charaka, Vaman is contraindicated in Ati Sthaulya.[18] however being a syndromic condition (Bahu Doshasya Laksanama) Samsodhana medical care is extremely suggested for Sthaulya patients possessing stamina & strength.[19] Sushruta has given reason of Vamana in Sthaulya, whereas it's indicated in Medorog. Ruksha, Ushna & Tikshna Basti are urged by Acharya Charaka.[20] so this manuscript aims to perform associate degree updated systematic illustration on the accessible literature, concerning healthful plants furthermore because the classical Ayurvedic monoherbal medical care helpful within the management avoirdupois and also the result was appreciating.[21]

OBJECTIVE

To assess the efficacy Thespesia populnea (Paras Pipal) fruit aqueous extract along with honey in the management of Obesity (Sthoulya).[22]

METHODOLOGY: Total Fifty six (56) patients with sign and symptoms of obesity were screened, after being taken informed consent from the concerned patients in a written format. Out of them thirty three (33) patient were completed two months therapy. The study was carried out in OPD and IPD of medicine department, RLAMC Chandkhuri, Durg, India. The study was conducted in the year 2016-19.

Criteria of inclusion (Inclusive Criteria): After calculation of BMI only obese patients were selected on the basis of signs and symptoms available in Ayurveda and modern medicine.

- BMI (body mass index)
- Weight in Kilogram
- Ati sthoulyam (Over weight)
- Atiswedanam(Excessive Sweating)
- Ati nidra (Excessive sleep),
- Ati Kshudha (Excessive hunger)
- SharamjanyaSwasa (Breathing problem)
- Ati trishna (Excessive thirst)

Criteria for rejection: Pregnancy, Lactation, Cardiac Disease and other severe illness.

Method of drug administration

Intake of Paras pipal Kashaya (PPK) along with Madhu (honey) was taken as the primary formulation for the study as it possesses properties like Medohara. PPK was prepared as per mentioned in classical reference.[23]

Ayurvedic description and pharmacology of medicinal plant Paras Pipal (Thespesia populnea)

Botanical name: Thespesia populnea Sol. ex Correa

Family: Malvaceae,

Pharmacodynamics: according to Ayurveda

Rasa: Kasaya

Guna: Laghu, Ruksha

Virya: sita

Vipaka: Katu

Doshakarma: Kaphapittashamaka

Karma: Mutrasangrahaniya, stambhana, Dahaprashmana, Visaghna, Medohara

Rogaghnata: Prameha, Pradara Yonirog, Shotha, Daha, Atisara, Arsha, Medorog, Visha

Chemical composition: The chemical constituents reported from this plant belong to different classes such as glycosides, tannins, flavonoids, volatile oils, steroids, resins, mucilage, and sugars.

Thespesia populnea has a number of medicinal uses, many of which have been verified by scientific methods. Plant is alternative, stimulant, demulcent, phlegmatic, and generative of semen. Traditionally, the fruit is used in Prameha, Kustha, Kandu, Daha, Rakta vikara, Pradar roga, Visa vikara and Medoroga etc.[24]

Heartwood of TP has been according within the treatment of ulceration and intestinal colic pain (Kirtikar & Basu, 1991; Nadkarni, 1982). additionally the plant has proved its potential as inhibitor and anti inflammatory properties that may be promising within the treatment of inflammatory bowel disease (Ilavarasan et al., 2003; Vasudevan et al., 2007). Root extracts of the plant square measure having antimicrobial activity (Senthil-Rajan et al., 2013), fruit pulp extracts square measure having medicine and antihyperlipidemic activities (Belhekar et al., 2013), and therefore the plant has anti-tumor, medicine (Mika & Guruvayoorappan, 2013), hepatoprotective (Yuvaraj & Subramoniam, 2009), and wound healing activities (Nagappa &

Cheriyan, 2001). a replacement finch proteinase is isolated from the leaves of this plant (Ishwarya & Sangeetha, 2013). the target of this study is to validate the people use of duramen of T. populnea for the treatment of UC.[25]

Method of preparation of PP kashaya

The fresh dry fruit of Paras papal plant was collected from the campus of RLAMC herbal garden and then it was cleaned and authenticated at the department of dravyaguna and then send to RSBK department for the preparation of the kashaya. The doses range of kashaya kalpana as explained in ayurveda varies from 30 to 50 ml. Hence a dose of 40 ml of Paras Pipal kashaya has decided to be given as trial dose to the patient register for the study.

Anupana: Honey

Duration of the study: 2 months (60 days)

Statistical analysis

Evaluating the efficacy of the drug paired‘t’ test was carried out by the help of SPSS software version 25.

OBSERVATION AND RESULTS

Table No.1: Comparison of Serum biochemical parameters observed in patients before and after the treatment.

Sign and symptom	Total no. of Pts.	Mean score		Mean Diff.	SD±	SE±	t-value	p value	Remark
		BT	AT						
BMI	33	29.19	28.06	1.13	0.874	0.152	7.44	0.000	HS
Body Weight	33	83.00	79.72	3.27	2.718	0.473	6.915	0.000	HS
Excessive Sweating)	33	2.484	2.060	0.424	0.560	0.967	4.34	0.000	HS
Excessive hunger	33	2.030	1.515	0.515	0.507	0.088	5.831	0.000	HS
Excessive sleep	33	3.00	2.57	0.424	0.501	0.873	4.856	0.000	HS
Breathing problem	33	1.09	1.00	0.909	0.384	0.066	1.359	0.184	NS
Excessive thirst	33	2.45	2.30	0.151	0.618	0.107	1.407	0.169	NS

Note:- (Abbreviation used): BMI-Body Mass Index, BT-Before treatment, AT-After treatment, SD-standard deviation, SEM-standard error of mean, NS-non significant, HS-Highly significant.

DISCUSSION

Obesity has become epidemic today and it is essential to understand the consequences of obesity. It is one of the disorders of non-communicable disease, which laid down foundation stone of diabetes mellitus, metabolic syndrome, hypertension and others. In ayurveda, sthaulya and medoroga has been described as obesity. Metabolic syndrome and obesity has various symptoms of different diseases but the fundamental pathology behind the development of this disease is meda dhatu dusti. Meda dhatu accumulates and obstructs the body srotas (channels) deriving the development of medoroga, madhumeha and vyanbalavaishamya also.[26] Acharya Chakrapani in his commentary on charaka samhita has explained that treatment of sthaulya should be planned to deplete only medo dhatu.[27]

Therefore, drugs possessing Vataghna, Kaphaghna, Deepana, Pachana and Srotoshodhaka properties are indicated in Sthaulya. In the present trial drug contains Kshaya rasa; Laghu and Ruksha Guna; Katu vipaka and kaphapittashamaka, Medohara, visahara and Dhatu shoshana properties, which normalize the state of Agni by regularizing Jatharagni and Dhatvagni .The regimen reducing the excessive growth and accumulation of medodhatu and thereby causing Lakshana upshamana of disease Sthaulya. Pharmacologicaly TP indicated as diuretics, purgatives, antidiaetic and antiviral activity which is very useful in weight loss. The drug TP has been used from remote antiquity for the ailing and afflicts. No clinical adverse effects in the patients were observed.

CONCLUSION

This study can be concluded, that aqueous extract of Thespesia populnea exhibited significant results as anti-obesity and hypolipidemic activity, which is described in ancient Ayurvedic classics. The mean changes in BMI before and after treatment is 1.13, which shows significant changes. The mean reduction in body weight is 3.27 which are highly significant. The mean changes in excessive sweating, excessive hunger and excessive sleep is 0.424, 0.515 and 0.424 respectively which are highly significant. Which can further be compared with any of the established medicine used for the long term treatment of obesity and it's associated generalized to specific complications. Again it was observed that the therapy is significantly effective and clinically safe as adverse events and reactions were not reported during the course of studies.

Conflict of interest: None.

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