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Standardization of Vyoshadi Saktu a Pathykalpana (Nutritional supplement) in Diabetes

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ABSTRACT

Neuropathy and Cardiac complications are the most common trouble in diabetes mellitus with progressive damage due to complex pathogenesis. Many conventional pharmacological agents were withdrawn from clinical studies either due to lack of efficacy or due to side effects on major organs. Over the period of time traditional herbal plants were utilized in the treatment & management of diabetic complications. The aim of the present research work was to investigate efficacy and dynamics of *Operculina turpethum* root (OT) in STZ induced diabetic neuropathy and cardiac complications. Chronic treatment of crude extract of OT (500 mg/kg) showed positive effect in diabetic animals with significant reduction in blood glucose level, serum nitrite, brain homogenate nitrite & nerve homogenate nitrite levels as compared to diabetic control animals. Treatment with OT showed significant rise in body weight compared to Control animals & polyphagia were observed in diabetic animals persisted throughout the period of 8 weeks. Significant improvement was observed by treatment with OT in behavioural parameters like tail flick latency reduction and rise in pain threshold capacity. Nerve conduction velocity measured through BIOPAC system showed significant ($P<0.05$) improvement in diabetic animals, while improvement were observed in ECG profile, R-R interval, R wave amplitude, heart rate & cardiac hypertrophy index in diabetic animals when treated with OT. It was concluded from results that there is definite role of *Operculina turpethum* in the treatment and management of major diabetic complications.

Keywords: *Vyoshadi Saktu*, diabetes, Standardization.

INTRODUCTION

According to the World Health Organisation (WHO), Diabetes is currently one of the biggest health concerns that the world is facing with. According to statistics from the International Diabetes Federation (IDF), India has more Diabetics than any other Nation of the World. Diabetes is a Killer Disease but its complications are fetal. Hence there is a need to search for effective and safe drug for the ailments. The etiology of Diabetes in India is multi factorial and includes genetic factors coupled with environmental influences, steady Urban Migration and Lifestyle changes. Diabetes cannot be cured but fortunately with appropriate and adequate Diet, regular Exercise, administration of nutritional supplement (*Pathya Kalpana*) one can easily control Diabetes. "*Vyoshadi Saktu*" is mentioned as a *Pathy Kalpana* in *Sthula Prameha* as well as in *Sthoulya chikitsa*, (Ref-Charak Samhita Sutrasthan 23/19-24 Santarpaniya Adyay.) In *Vyoshadi Saktu* there are 22 herbal ingredients used for preparation. Preparation of authentic and quality *Vyoshadi saktu* can give effective results in the treatment of diabetes. Hence from raw drugs, in process and finished product if analysis of the ingredients is done as per the *Ayurved* pharmacopeia one can assure the quality of Standardization of *Vyoshadi saktu* preparation.

MATERIALS AND METHODS

Plant material

Twenty three herbal anti-diabetic herbs are mentioned in the reference of *Vyoshadi Sak*tu. For Standardization purpose all twenty three herbal powder were procured from local market of Pune.
All the herbs were authenticated by the pharmacognocy experts.

Methods:

Organoleptic evaluation

Organoleptic evaluation refers to evaluation of individual drugs and formulations by color, odor, taste, texture etc. The organoleptic characters of the samples were carried out based on the method as describe

by *Dravyaguna Vidyan –Priyavat Sharma, Bhavprakash Nighantu*.

For determining the odor of an innocuous material, small portion of the sample was placed in the beaker of suitable size, and examined by slow and repeated inhalation of the air over the material. If no distinct odor was perceptible, the sample was crushed between the thumb and index finger, between the palms of the hands, using gentle pressure or if the material was known to be dangerous, by other suitable means such as pouring a small quantity of boiling water onto the crushed sample placed in a beaker. First, the strength of the odor was determined (none, weak, distinct, strong) and then the odor sensation (*Gandha- Soumya,Ugra* etc.) was studied.

Physicochemical properties

Physical characteristics like moisture content

Moisture Content

Moisture affects the processibility, shelf life, usability and quality of products. Hence determination of moisture content is very important. 10 g of drug powder accurately weighed is kept in a tarred evaporating dish. Which is dried at 105°C for One hour and Note down the weight of the powder and % is calculated.

To check moisture content helps prevent degradation of product.

Extractive values

Water soluble extractives

Five grams of coarsely powdered air-dried drug is macerated with 100 ml of Chloroform water in closed conical flask for 24 hours, shaken frequently for the first 6 hours and allowed to stand for 18 hours. This was filtered through Whatman filter paper. Twenty-five milliliters of the filtrate was evaporated to dryness in Petri dried at 105 °C, and weighed. Percentage of water soluble extractive with reference to air-dried material is calculated.

Alcohol soluble extractives

Five grams of air-dried and coarsely powdered drug is macerated with 100 ml of 70% ethanol in a closed conical flask for 24 hours, shaken frequently during the first 6 hours, and allowed to stand for 18 hours. This is filtered rapidly taking precaution against loss of ethanol. Twenty-five milliliters of the filtrate is evaporated to dryness in a Petri dish, dried at 105° C, and weighed. Percentage of alcohol soluble extractive is calculated with reference to air-dried drug.

These are indicating the approximate measure of chemical constituents of crude drug

Ash values

Total ash

Two grams of grounded air-dried material is accurately weighed in a previously ignited and tarred silica crucible. The drug is gradually ignited by raising the temperature to 450°C until it becomes white. The sample is cooled in a desiccator and weighed. The percentage of total ash is calculated with reference to air-dried drug.

Acid Insoluble ash

The ash is boiled with 25 ml of 2 M hydrochloric acid for 5 minutes, the insoluble matter is collected on an ash less filter paper, washed with hot water, ignited, cooled in a desiccator, and weighed. The percentage of acid insoluble ash is calculated with reference to the air-dried drug.

Water Soluble ash

The ash is boiled with 25 ml of water for 5 minutes, the insoluble matter on ash less filter paper collected, washed with hot water, ignited, cooled in desiccators, and weighed. The weight of the insoluble matter from the weight of the total ash is subtracted; the difference represents the water soluble ash. The percentage of water insoluble ash is calculated with reference to the air-dried drug.

It is criteria to judge the identity and purity of crude drug

Phytochemical screening

A small portion of the dry crude extract is used for the phytochemical analysis. Dried Water and Alcoholic extract of Vyoshadi Saktu Dravya is used for TLC

Thin Layer Chromatography

The TLC is performed on pre coated 12×2cm and 0.25 mm thick plates. Water extract and Alcoholic were plotted on TLC plates. The plates were dried and developed in suitable solvents for rapid screening chloroform / Glacial Acetic acid in the ratio 8:2. The plates were run in the above solvent systems and dried at room temperature. Derivatisation of TLC plates was done by UV light at 254mm. Different bands were observed and corresponding Rf values were determined. Rf value of each spot was calculated as:-

Rf = Distance travelled by the solute / Distance travelled by the solvent.

RESULTS AND DISCUSSION

As a part of Standardization procedure, all ingredients' powders and finished product *Vyoshadi Saktu* were tested for physical and chemical Parameters. Quality Test for *Vyoshadi Saktu* were performed for Moisture Content (Table-1), Water Soluble extractives, Alcohol Soluble extractives (Table-2), Total Ash Value, Acid Insoluble Ash, Water Soluble Ash (Table-3) were found within Standard ranges. In addition, TLC was done with water and alcohol extract of *Vyoshadi Saktu* and there Ingredients. Chloroform and Glycial Acetic Acid (8:2) was used as a mobile phase and Iodine vapors as visualizing agent, Rf value (Table-4, Figure 1) were calculated.

Table 2: Moisture Content of individual drug Powders

Sr. No.	*Dravya*	Moisture Content
1	*Yava*	0%
2	*Chitrak*	0%
3	*Kantakari*	1%
4	*Aamalaki*	1%
5	*Haritaki*	0.5%
6	*Bibhitaki*	0.1%
7	*Sunthi*	0.1%
8	*Marich*	0%
9	*Pimpali*	0.1%
10	*Haridra*	0%
11	*Kutaki*	0.2%
12	*Shalapani*	1%
13	*Ajavayan*	0%
14	*Vidanga*	0%
15	*Dhanyak*	1%
16	*Bruhati*	0%
17	*Patha*	1%
18	*Shigrusal*	0.1%

19	*Daruharidra*	0%
20	*Ativisha*	1%
21	*Hinga*	2%
22	*Krushnalavan*	3%
23	*Vyoshadi Saktu*	0.3%

Table 3: Water Soluble, Alcohol Soluble Extractive value of individual drug Powders

Sr. No.		**Extractives**	
	Dravya	**Water**	**Alcohol**
1	*Yava*	*7.6%*	*2.7%*
2	*Chitrak*	*3.56%*	*10.45%*
3	*Kantakari*	*11.6%*	*5.12%*
4	*Aamalaki*	*38.24%*	*35%*
5	*Haritaki*	*55.0%*	*39.55%*
6	*Bibhitaki*	*56.48%*	*8%*
7	*Sunthi*	*8.36%*	*2.56%*
8	*Marich*	*9.08%*	*7.1%*
9	*Pimpali*	*33.64%*	*9.8%*
10	*Haridra*	*11.44%*	*7.98%*
11	*Kutaki*	*22.08%*	*14.2%*
12	*Shalapani*	*4.48%*	*0.98%*
13	*Ajavayan*	*4%*	*13.8%*
14	*Vidanga*	*15%*	*10.12%*
15	*Dhanyak*	*14.12%*	*9.34%*
16	*Bruhati*	*4.44%*	*2.64%*
17	*Patha*	*6.6%*	*8.44%*
18	*Shigrusal*	*11.56%*	*5.67%*
19	*Daruharidra*	*3.48%*	*5.61%*
20	*Ativisha*	*11.76%*	*5.43%*
21	*Hinga*	*52.8%*	*50.12%*
22	*Krushnalavan*	*99.08%*	*1%*
23	*Vyoshadi Saktu*	*6.56%*	*1.5%*

Table 4: Total Ash, Acid Insoluble Ash, Water Soluble Ash of individual drug Powders

Sr. No.	***Dravya***	**Total Ash Value**	**Acid Insoluble Ash**	**Water Soluble Ash**
1	*Yava*	1.88%	0.8%	0.2%
2	*Chitrak*	4%	1%	4.5%
3	*Kantakari*	6.75%	3%	2.32%
4	*Aamalaki*	3.88%	2.36%	1.32%
5	*Haritaki*	3.64%	5.4%	2.4%
6	*Bibhitaki*	5%	1%	0.2%
7	*Sunthi*	4.68%	3.64%	2.44%
8	*Marich*	6.24%	1.12%	0.52%
9	*Pimpali*	12.56%	6.52%	2.84%
10	*Haridra*	6.76%	5%	4.24%
11	*Kutaki*	4.8%	3.8%	2.04%
12	*Shalapani*	11.12%	5.96%	3.36%
13	*Ajavayan*	8.12%	4.2%	2.68%
14	*Vidanga*	5%	1.5%	4.36%
15	*Dhanyak*	6.52%	6.28%	2.44%
16	*Bruhati*	6.56%	1.46%	1.8%
17	*Patha*	6.68%	1.76%	1.73%
18	*Shigrusal*	7.22%	2.84%	1.88%
19	*Daruharidra*	3.12%	1.52%	0.32%
20	*Ativisha*	2.36%	0.04%	0.1%
21	*Hinga*	1.96%	1.04%	0.024%
22	*Krushnalavan*	96.4%	8.4%	7.28%
23	*Vyoshadi Saktu*	2.68%	1.92%	2.56%

Table 4: Rf value of individual drug Powders

Sr. No.	***Dravya***	**Rf Value**	
		Alcohol	**Water**
1	*Yava*	0.43	0.5
2	*Chitrak*	0.1	0.235
3	*Kantakari*	0.75	0.74
4	*Aamalaki*	0.277	0.315
5	*Haritaki*	0.7	0.625
6	*Bibhitaki*	0.312	0.225
7	*Sunthi*	0.1	0.166
8	*Marich*	0.125	0.0588
9	*Pimpali*	0.1875	0.25
10	*Haridra*	0.9	0.4
11	*Kutaki*	0.2	0.3
12	*Shalapani*	0.5	0.55
13	*Ajavayan*	0.8	0.7
14	*Vidanga*	0.75	0.55
15	*Dhanyak*	0.1	0.222
16	*Bruhati*	0.1818	0.3636
17	*Patha*	0.111	0.166
18	*Shigrusal*	0.777	0.8
19	*Daruharidra*	0.444	0.2
20	*Ativisha*	0. 88	0.87
21	*Hinga*	0.1875	0.25
22	*Krushnalavan*	0.4	0.2

Figure 1: TLC profile of samples

CONCLUSION

Ayurvedic medicines are age old. For global acceptance of these medicines they should stand the modern parameters of standardizations. If these medicines are prepared authentically and have assured quality then definitely will be accepted globally. This can be achieved only if the herbal products are evaluated and analyzed using sophisticated modern techniques of standardization. Standardisation of herbal formulation is essential in order to assess the quality of drugs, based on the concentration of their active principles. The physicochemical standardization of polyherbal formulation of Vyoshadi Saktu churna was carried out. The individual ingredients of the formulation were authenticated and standardized as per Ayurvedic Pharmacopoeia of India. The in-house formulation was prepared and studied for various physicochemical properties and found to be at par with the standards mentioned in the Ayurved Pharmacopeia.

REFERENCES

1. Government of India, Ministry of Health and family welfare First edition. New Delhi: Department of ISM and H; 2003. The Ayurvedic Pharmacopoeia of India, Part I-Vol I- pg.no.-1-123.
2. Dr. Devendra Joshi, Dr. Geeta Joshi, Quality Control & Standardization of Ayurvedic Medicines,First Edition.Varanasi:Chaukhamba Orientalia; 2011; pg.no.-110-1
3. BrahmanadTripathi, Editor.The Charaksamhita of Agnivesha elaborated by caraka and Dridhbala edited with Charak –Chandrika , Edition II , Sutrasthana; chapter 23 /19-24Reprinted.Varanasi: Chowkhambha Surbharati prakashan; 2002.
4. Government of India, Ministry of Health and family welfare, Department of AYUSH, Pharmacopoeial Laboratory For Indian Medicines, Ghaziabad. Protocol for Testing of Ayurvedic, Siddha & Unani Medicines, pg.no.-54-56,50,40-49.
5. Sharma P.V, Dravyaguna Vijnana II-Reprint, Varanasi:Chaukhamba Books 2009; pg.no.162-678.
6. Brahmashankar Mishra, Editor Bhavprakash, 10th Edition Varanasi:Chaukhamba Publication, 2002; pg.no.4-340.

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