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THE EFFECT OF *RUKSHANA PACHANA CHURNA (KRUSHNAJIRKA, YAVANI, METHIKA)* IN INSULIN RESISTANCE W.S.R. TO OVERWEIGHT INDIVIDUALS

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ABSTRACT

In the present era there are different types of diseases due to life style changes and dietary habits. Obesity, insulin resistance etc. are occures because of them. In obesity adipose tissue release FFA in abundance. FFA results in increase production of LDL, triglycerides and reduce insulin sensitivity which results in hyperinsulinemia and other metabolic disorders. In *charak samhita sutra* 21 *sthaulya is* mentioned as *santarpaniya vyadhi*. In *sthaulya*, due to *agnimandya* there is production of *apachit medodhatu*. As in *charak samhita* the management of *sthaulya* includes *rukshan pachan lekhaniya* and *aptarpaniya dravya*. Due to these properties of *krushnajirka yavani* and *methika* we opted these *dravya* in the insulin resistance. In this study *rukshana pachana churna (krishnajiraka, yavani, methika)* was given to 10 patients for 45 days. And the value of Sr. insulin, BSL fasting and postprandial, HOMA IR value and weight were obtained. The significant effect was found in above parameters.

INTRODUCTION

The twenty first century is an era of tremendous development and innovation in all aspects of life in general and in the field of technology in particular, which has made living much more comfortable on one side but on other side, gifted many lifestyle disordes.

One of such gift is obesity. It may be manifested by elevation of total cholesterol, low density lipoprotein cholestrerol. Hyperlipidemia is a condition in which the level of lipoproteins are raised, which can be co-related to *medovruddhi* (lipids) in the body. Adipose tissue released

FFA's in abundance. It increases the production of low density lipoproteins. FFA also reduce insulin sensitivity in muscle by inhibiting insulin associated defect includes a reduction in glucose and increase lipid accumulation. In this way obesity results in increase incidence of insulin resistance.

Obesity is contributed by high fat diet, sedentary lifestyle etc. these causative factors can be compared to snigdha, guru, picchila guna sevana and cheshthadvesha (lack of exercise) which leads to santarpaniya vyadhis. Hence, obesity can be brought under the broad umbrella of santarpanjanya vyadhis. So treatment of sthaulya includes drug causing rukshana, pachana, lekhana and apatarpana in body. So we have choosen krushnajirka, mehika, yavani churna having rukshana pachana and vatakaphaghna properties and katu ruksha ushna guna.

REVIEW OF LITERATURE

In *Charak Samhita*, chapter no. 21 of *sutrasthana*, there is explaination about *santarpaniya vyadhi chikitsa* of *santarpanaiyajanya vyadhi*. Obesity and insulin resistance comes under the umbrella of broad concept of *santarpanajanya vyadhiv*. As obesity and insulin resistance comes under *apachita medodushtee*. So in *Charak Samhita sutrasthana* 21 the *chikitsa* of *sthaulya* is maintion as fallow:

"Vataghna annapanani shleshmamedoghnani |
Rukshnoshna bastayateeksharukshanyaudwartanani ch ||"

In above *chikitsa sutra*, as stated as *ruksha ushna dravya* is used. The *guna karma* of these *dravya* is explained in *Charak, Sushrut* and other *samhitas. Krishnajirka, yavani, methika* has *rukshana, pachana, lekhana, ushna, katu, kapha-vatahara* properties which is used in weight reduction by some ayurved medicine practitioners. Also in *sutrasthan*a chapter 21, there is explaination about *ashtaunindit vyaktee*, in which symptoms of *ateesthaulya* is explain as fallow:

"Atisthoolasya tavdayusho rhaso javoprodh kruchhavyavayata daurbalyam daurgandyam swedabadh kshudhatimatra pipasatiyogashcheti bhavantyashtau dosha ||"

OBJECTIVE

1. To find out the effect of krushnajiraka, yavani, methika in insulin resistance associated with obesity.

METHODOLOGY

Clinical case study was done over 10 patients who visited in kayachikitsa OPD in our institute.

Criteria For Diagnosis

- Two sign of obesity- Body mass index (BMI)- > 23 -30.5kg/m
  -waist circumference- in male >90cm
  - in female >80cm
- HOMA IR- > 2

$$\text{HOMA IR} = \frac{\text{Fasting Glucose (mg/dl)} \times \text{Insulin (mu/L)}}{n}$$

n=405 if fasting glucose in mg/dl

n=22.5 if fasting glucose in mmol/dl

- 3 symptoms of *sthaulya* according to Ayurveda

- a. *daurbalya*
- b. *kshudhatimatra*
- c. pipasatimatra

- Hyperinsulinemia

Inclusion Criteria

- Patients fulfilling above diagnostic criteria.
- Patients of age between 18 years to 70 years.

Exclusion Criteria

- Patients having age less than 18 years and above 70 years.
- Patients suffering from any systemic disorders.
- Patient taking medicine for weight reduction lipid lowering drugs or obesity due to drugs consumption.
- Pregnant and lactating women.
- Patients having history of untreated thyroid disorders.

Investigation

- Serum insulin fasting
- Blood sugar level-fasting
  -postprandial

Subjective Criteria

- Daurbalya
- Pipasatimatra
- Kshudhatimatra

Drug Dose – 15 gm of mixture of *churna(krushnajiraka, yavani, metheka)*

Study Durartion - 45 days

Also *pathyapathya* was advised.

1. Daurbalya

Sr. no	Gradation	
1	Absent	Grade 0
2	Weakness after doing heavy physical work or exercise	Grade 1
3	Routine activity disturbed but not ambulatory	Grade 2
4	Ambulatory	Grade 3

2. Pipasatimatra

Sr. no	Gradation	
1	Feeling of thirst & relived by drinking water (7-8 times/day)	Grade 0
2	Feeling of moderate thirst & relived by drinking water (9-10 times/day)	Grade 1
3	Feeling of excess thirst & not relived by drinking water (11-13 times/day)	Grade 2
4	Feeling of sever thirst & not relived by drinking water (>13 times/day)	Grade 3

3. Kshudhatimatra

Sr. no	Gradation	
1	Routine	Grade 0
2	1 meal extra with routine diet	Grade 1
3	2 meal extra with routine diet	Grade 2
4	3 meals extra with routine diet	Grade 3

OBESRVATION

- **Subjective**

1. Daurbalya

Sr. no	Before treatment	After treatment	% of relief
1	1	0	100%
2	1	0	100%
3	2	1	50%
4	2	1	50%
5	3	2	25%
6	2	0	100%
7	2	1	50%
8	2	1	50%
9	1	0	100%
10	2	0	100%

2. Pipasatimatra

Sr. no	Before treatment	After treatment	% of relief
1	2	1	50%
2	1	0	100%
3	1	0	100%
4	1	0	100%
5	3	2	25%
6	2	1	50%
7	2	0	100%
8	2	1	50%
9	1	0	100%
10	1	1	0%

3. Kshudhatimatra

Sr. no	Before treatment	After treatment	% of relief
1	2	1	50%
2	2	0	100%
3	1	0	100%
4	1	0	100%
5	2	2	0%
6	3	2	25%
7	2	0	100%
8	1	2	-25%
9	1	1	0%
10	2	0	100%

4. Overall Effect in Subjective Criteria

Sr. no	% Relief In Daurbalya	% Relief in Pipasatimatra	% Relief in Kshudhatimatra	Total % Relief
1	100	50	50	66.66%
2	100	100	100	100%
3	50	100	100	83.33%
4	50	100	100	83.33%
5	25	25	0	16.66%
6	100	50	25	58.33%
7	50	100	100	83.33%
8	50	50	-25	25%
9	100	100	0	66.66%
10	100	0	100	66.66%
Total % relief in all subjective criteria				56.66%

- **OBSERAVATION LEVELS**

5. Serum insulin

Sr. no	Before T/t	After T/t	Difference in level	% of relief
1	19.1	20.8	-1.7	-8.90%
2	13.6	12.5	1.1	8.08%
3	16.3	10.4	5.9	36.19%
4	22.5	21.3	1.2	5.33%
5	16.2	18.5	-2.3	-14.19%
6	26.3	21.3	5	19.01%
7	16.5	11.2	5.3	32.12%
8	18.2	14.6	3.6	19.78%
9	24.1	21.2	2.9	12.03%
10	19.3	17.7	1.6	8.29%
Total % relief in Sr. insulin level				6.66%

6. BMI

Sr. no	Before T/t	After T/t	Difference in level	% of relief
1	30.2	28.4	1.8	5.96%
2	27.48	27.48	0	0%
3	30.58	30.58	0	0%
4	32.22	31.48	0.74	2.29%
5	39.36	38.29	1.07	2.71%
6	35	33.77	1.23	3.5%
7	35.15	33.98	1.17	3.32%
8	34.24	33.33	0.91	2.65%
9	35.06	34.19	0.87	2.48%
10	31.32	29.71	1.61	5.14%
Total % relief in BMI				2.80%

7. Weight

Sr. no	Before T/t	After T/t	Difference in level	% of relief
1	75.5	71	4.5	5.96%
2	83	83	0	0%
3	84	84	0	0%
4	87	85	2	2.29%
5	111	108	3	2.7%
6	79	76	3	3.79%
7	90	87	3	3.33%
8	75	73	2	2.66%
9	81	79	2	2.46%
10	78	74	4	5.12%
Total % relief in weight				2.83%

8. BSL

Sr. no	Before T/t	After T/t	Difference in level	% of relief
1	F-74	F-104	-30	-40.54%
	PP-112	PP-126	-14	-12.5%
2	F-85	F-72	13	15.29%
	PP-104	PP-98	6	5.76%
3	F-89	F-74	15	16.85%
	PP-103	PP-102	1	0.97%
4	F-82	F-73	9	10.97%
	PP-98	PP-94	4	4.08%
5	F-95	F-92	3	3.15%
	PP-132	PP-121	11	8.33%
6	F-74	F-72	2	2.7%
	PP-80	PP-80	0	0%
7	F-81	F-79	2	2.4%
	PP-93	PP-90	3	3.2%
8	F-83	F-79	4	4.81%
	PP-101	PP-99	2	1.98%
9	F-92	F-90	2	2.17%
	PP-124	PP-116	8	6.45%
10	F-82	F-80	2	2.43%
	PP-106	PP-104	2	1.8%
Total % relief in BSL				F- 2.02%
				PP- 2.007%

9. Table for HOMA IR

Sr. no.	BT	AT	Difference between index	Percent difference
1.	3.4	5.34	-1.94	-57%
2.	2.85	2.22	0.63	22.10%
3.	3.5	1.90	1.6	45.71%
4.	4.5	3.83	0.7	15%
5	3.8	4.2	-0.4	-10.52%
6	4.80	3.75	1.05	21.87%
7	3.31	2.1	1.21	36.55%
8	3.72	2.84	0.88	23.65%
9	5.47	4.7	0.77	14.07%
10	3.90	3.49	0.41	10.51%
Total % relief in HOMA IR				12.19%

DISCUSSION

In charak samhita sutra 21 sthaulya is mentioned as santarpaniya vyadhi. In sthaulya, due to agnimandya there is production of apachit medodhatu which we can be compared with low density lipoproteins. As in charak samhita the management of sthaulya includes rukshan pachan lekhaniya and aptarpaniya dravya.

Due to these properties of *krushnajirka yavani* and *methika* we have choosen these *dravya* in the insulin resistance. *Krishnajirka, yavani, methika* has *rukshana, pachana, lekhana, ushna, katu, kapha-vatahara* properties which has resulted in the reduction of following: *daurbalya, kshudhatimatra, pipasatimatra*, weight reduction and decreased level of serum insulin.

1. The Table no. 4 represents the overall effect in subjective criteria.
2. The Table no. 5 represents the values of Serum insulin in which 8 pts shows decrease in Sr. insulin level by 8-36% and 2 pts shows the increased value of Sr. insulin.
3. The Table no 6 represents the difference in BMI value, in which overall BMI is reduced by 2.80%.
4. The Table no. 7 represents the difference in weight before and after the treatment.
5. The Table no. 8 represents the value of BSL, in which 9 pts shows the decreased level of BSL fasting and postprandial.
6. The Table no. 9 represents the HOMA IR of the patients before and after treatment which is significant.

RESULT

In This clinical study; we got significant result in decrease in values of Serum insulin Fasting, Blood Sugar Level and in subjective criteria along weight reduction in patients as mentioned in above observational tables.

CONCLUSION

So from above all observations in stated clinical study, we observed *krishnajirka, yavani, methika* has reduced serum insulin level, weight, circumference and subjective criteria .we observe the significant effect of *krishnajirka,yavani, methika* in the overweight individuals with insulin resistance. Further more clinical trials are needed to established the results as sample size was too short in this study.

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