



APAMARGA: POTENT HERB FOR WEIGHT MANAGEMENT

¹Vimla Dunkwal, ²Mamta Singh, ³Namrata Jain, ⁴Surbhi Shekhawat and
⁵Indu Arora

¹Professor, ²Assistant. Professor, ³SRF, ⁴Ph.D. Scholar and ⁵M.Sc. Scholar

^{1, 2, 3, 4, 5} Department of Food and Nutrition, College of Community Science,
Swami Keshwanand Rajasthan Agriculture University, Bikaner, Rajasthan, India

Abstract: The herbaceous weed *Apamarga* was studied for its nutrient composition, product development and the effect of *Apamarga* consumption on anthropometric measurement. The dried and dehusked seeds of *Apamarga* recorded to contain 8.70 percent moisture, 19.46 percent crude protein, 3.71 percent crude fat, 3.67 percent crude fibre, 60.08 percent carbohydrate, 4.36 percent total ash, 355.58 kcal/100 g energy on dry weight basis. The powdered seed was used to develop product in the laboratory viz., *kheer* and lemon tea. The mean scores of *kheer* for their organoleptic acceptability on nine point hedonic ranking scale ranged from 7.3 to 7.7. Similarly mean scores of lemon tea ranged from 7.4 to 7.6. The effect of *Apamarga* consumption on anthropometric measurements in randomly selected obese female patients (N=100) was evaluated in two groups (aged 35-50 years) i.e. group I and group II. Group I was on conventional treatment i.e. diet and exercise and group II was not placed on any conventional treatment like group I. Intervention with *Apamarga* was conducted for a period of 3 months and different anthropometric parameters were assessed. Mean value of BMI and WHR in group I at the initiation of the study were 33.30 and 0.79 respectively. Subjects observed changes in their BMI and WHR i.e. 29.93 and 0.81 respectively after the administration of *Apamarga* for 3 months with suggested regimen. There are significant difference between the measurements at 1 percent and 5 percent level for BMI and WHR respectively. Similarly, the mean value of BMI in the group II at the base line and at the end of the study was 33.88 and 31.72 respectively. It showed significant difference at 1 percent level in both the anthropometric parameters i.e. BMI and WHR.

Index Terms: *Apamarga*, nutrient composition, product development and anthropometric measurement.

I. INTRODUCTION

Herbal medicines are widely used in health care in both developed and developing countries. According to World Health Organization, about 80% of the world population still uses herbs and other traditional medicines for their primary health care needs. In India many herbal remedies have been recommended in various medical accords and overweight. The use of herbal medicines has increased remarkably in line with the global trend of people returning to natural therapies. Ayurveda utilizes different forms of herbs in therapeutics. *Apamarga* is one among such forms. *Achyranthus aspera* (*Amaraanthaceae*) called '*Apamarga*' in Sanskrit has long been used as medical plant (The ayurvedic pharmacopoeia of India, 1998). The dried and dehusked seeds contain Protein (22.5 gm.), Fat (4.7gm) and Energy (3.92 Kcal/g) (www.wealthofindia.com). According to Ayurveda, it is bitter, pungent, laxative and is useful in the treatment of excessive appetite, bronchitis, heart disease, piles, dyspepsia and blood disease etc. *Achyranthus aspera* powder with honey helps improve digestion due to its *Deepan* (appetizer) and *Pachan* (digestive) properties. Regular consumption of a handful of *Achyranthus aspera* seeds helps manage weight by reducing excess fat accumulation which results in reduction of body weight. Directly applying the juice of *Achyranthus aspera* leaves at the affected area might help in wound healing due to its astringent and anti-inflammatory. It can also be used to provide relief from ulcers due to its anti-ulcer and gastro protective activity (www.indiaherbs.com).

II. MATERIAL AND METHODS–

2.1 Procurement of the sample - The dried seeds of *Apamarga* was procured from RAU herbal garden.

2.2 Nutritional evaluation of *Apamarga* seeds –The seeds of *Apamarga* were also analyzed for nutrient content i.e. moisture, crude protein, crude fat, crude fiber, ash, total carbohydrate and energy.

2.3 Development and standardization of *Apamarga* based products -The *Apamarga* based products i.e. *kheer* and lemon tea were developed using *Apamarga* seeds in powder form keeping in mind that one should consume 4g *Apamarga* powder per day as per discussion held with Ayurveda doctors and standardized in the laboratory with the help of sensory evaluation technique.

2.4 Study the weight reducing effect of *Apamarga* seeds

- **Locale of study** – The present study was conducted on the obese female subjects residing in Rajasthan Agricultural University Campus, Beechwal (Bikaner) under purposive and convenient sampling.
- **Selection of subjects** – The persons with overweight and obese was identified as subjects of the study with maximum homogeneity in age, occupation and life-style. Identified individuals were personally contacted. Thereafter, Out of 100 subjects

62.5 percent subjects were randomly selected on the following inclusion criteria and no dropouts were there as consent form was filled by them:

Inclusion criteria:

- Free from severe disease.
- Subjects willing to cooperate during the study and prepared to take the herbal formulation (Lemon *Apamarga* tea) regularly for a period of 3 months.

Hundred subjects were selected for the present study and were divided into group I and group II according to their willingness:

- **Group I** – Subjects (N=50) were given tea using 2 g *Apamarga* powder twice a day for three months and were followed the conventional treatment i.e. diet, exercise and thus served as group I.
- **Group II** – Subjects (N=50) were given tea using 2 g *Apamarga* powder twice a day for three months and were asked not to follow any conventional treatment like group I.

2.5 Anthropometric measurements - The patients was assessed for their weight (Robinson et al., 1988), Height (Jelliffe, 1966), BMI (James et al., 1988) and WHR (WHO, 2000).

III. STATISTICAL ANALYSIS OF DATA:

The mean, 't' test and standard deviation were used during present study for statistical analysis of the findings. 'The statistical analysis was carried out with the help of 'IBM Statistical Package for the social sciences, Statistics software.

IV. RESEARCH AND DISCUSSION:

The results obtained from the present investigation as well as relevant discussions have been summarized under following heads:

4.1 Nutritional analysis of *Apamarga* –

Results of proximate composition are represented in the **Table 4.1**. The dried and dehusked seeds of *Apamarga* contained 8.70 percent moisture, 19.46 percent crude protein, 3.71 percent crude fat, 3.67 percent crude fibre, 60.08 percent carbohydrate, 4.36 percent total ash, 355.58 kcal/100 g energy on dry weight basis. The values of present findings are at par when compared with the values reported in wealth of India (2003) for moisture (9.1%), protein (22.5%), fat (4.7%), carbohydrate (56.1%), fibre (1.8%), ash (4.6%), calcium (0.1%) and potassium (0.46%).

Table 4.1. Proximate composition of *Apamarga* (on dry weight basis)

Nutrients	<i>Apamarga</i>
Moisture (%)	8.70 ± 0.78
Crude protein (%)	19.46 ± 0.28
Crude fat (%)	3.71 ± 0.05
Crude fibre (%)	3.67 ± 0.09
Carbohydrate (%)	60.08 ± 0.09
Total ash (%)	4.36 ± 0.31
Energy (kcal/100 g)	355.58 ± 0.59

4.2 Organoleptic evaluation of products –

Standardization is aimed at obtaining consistently good quality outcome which means that the every repetition of the procedure will result in a standard product. Various products were developed by using *Apamarga* seeds powder and evaluated for various sensory characteristics by a panel of 10 judges using 9-point hedonic scale. Data regarding sensory characteristics of *Apamarga* based products have been displayed in **Table 4.2**.

Kheer – *kheer* was prepared by using *Apamarga* powder, sugar and milk. **Table 4.2** depicts the mean scores of the sensory parameters and scores for the colour, appearance, texture, aroma and taste were 7.3, 7.4, 7.4, 7.6 and 7.7 respectively and “liked moderately” by the panel members.

Lemon Tea - Lemon tea was prepared by using *Apamarga* powder. Mean scores of the sensory parameters and scores for the colour, appearance, texture, aroma and taste were 7.6, 7.5, 7.6, 7.5 and 7.4 respectively and the mean overall acceptability found to be 7.5 on nine point hedonic ranking scale and fell in the category of “liked moderately” to “liked very much” (**Table 4.2**).

Table 4.2. Organoleptic acceptability of *Apamarga* based products

S. No.	Products	Mean score of sensory characteristic on nine point scale					
		Colour	Appearance	Texture	Aroma	Taste	Overall acceptability
1.	<i>Kheer</i>	7.3 ± 0.78	7.4 ± 0.66	7.4 ± 0.66	7.6 ± 0.48	7.7 ± 0.64	7.5 ± 0.45
2.	Lemon tea	7.6 ± 0.48	7.5 ± 0.80	7.6 ± 0.48	7.5 ± 0.92	7.4 ± 0.80	7.5 ± 0.64

4.3 Effect of feeding of *Apamarga* on Anthropometric measurements –

Overweight and obese subjects were analyzed for different parameters like weight, height, body mass index and waist hip ratio at the starting of the study and at the end of the study i.e. after 3 months in the both groups. On the basis of above data body mass index and Waist hip ratio were calculated and analyzed for changes observed.

Table 4.3. Comparison of BMI and WHR at baseline and after three months of group I

Parameters	Mean observations			't' value
	At baseline (a)	After 3 months (b)	Changes after 3 months (a-b)	
BMI	33.30 ± 3.00	29.93 ± 3.14	3.37 ± 0.82	19.55**
WHR	0.79 ± 0.04	0.81 ± 0.04	-0.019 ± 0.04	2.20*

Values are ± SD of three replicates, * = Significant at 5 % level, ** = Significant at 1 % level

BMI=Body Mass Index, WHR=Waist Hip Ratio

Perusal of the **Table 4.3** indicated that the mean values of BMI and WHR in group I at the initiation of the study were 33.30 and 0.79 respectively. Subjects observed changes in their BMI and WHR i.e. 29.93 and 0.81 respectively after the administration of *Apamarga* for 3 months with suggested regimen. Data showed that there was a significant difference between the measurements at 1% and 5% level for BMI and WHR after 3 months intervention of *Apamarga* respectively. This might be due to the *Apamarga* administration in combination with their controlled dietary pattern adopted by them for their weight loss.

Table 4.4 Comparison of BMI and WHR at baseline and after three months of group II

Parameters	Mean observations			't' value
	At baseline (a)	After 3 months (b)	Changes after 3 months (a-b)	
BMI	33.88 ± 2.96	31.72 ± 2.85	2.16 ± 0.40	25.90**
WHR	0.78 ± 0.04	0.80 ± 0.04	-0.015 ± 0.02	3.15**

Values are ± SD of three replicates, ** = Significant at 1 % level

BMI=Body Mass Index, WHR=Waist Hip Ratio

Table 4.4 revealed that the mean values of BMI in the group II at the baseline and at the end of the study was 33.88 and 31.72 respectively and WHR was 0.78 and 0.80 respectively. The results showed that significant difference observed at 1 percent level in both the anthropometric parameters i.e. BMI and WHR. This indicates that *Apamarga* was also effective for the subjects who were not following the dietary restrictions.

CONCLUSION: India is an authentic emporium of medicinal plant from ancient times, these plants have been used to attempt cures for disease and to relieve physical suffering. *Apamarga* is an herbaceous weed with great therapeutic and nutritive value. Hence, it can be very well concluded that *Apamarga* administration for 3 months significantly proved to be effective in reduction in BMI and WHR indicating positive health benefits of *Apamarga* consumption on overweight and obese patients. It is acclaimed for further study that efficiency of *Apamarga* based products on other diseases.

REFERENCES:

- 1) [http:// www.indiaherbs.com](http://www.indiaherbs.com)
- 2) [http:// www.wealthofindia.com](http://www.wealthofindia.com)
- 3) Jelliffe (1966). Assessment of the nutritional status of a community. *Monograph series*. 53 (WHO, Geneva)
- 4) James, WPT, Ferro-Luizzi, A. and Waterlow, J.C. (1988). The Definition of Chronic Energy Deficiency in Adults. *Eur. J. Clin. Nutr.* 42: 968-81.
- 5) Robinson, C.H., Lawler, M.R., Chenoweth, W.L. and Garwick, A.E. (1988). Normal and Therapeutic nutrition, 17th Ed., Macmillian Publishing Co. Inc. Toronto, Canada, London, New York: 136-145, 365-383.
- 6) The Ayurvedic Pharmacopeia of India (1998). Nutritional Problems. Vol. 3rd: 165-176.
- 7) Wealth of India (2003). A Dictionary of Indian Raw Material and Industrial Products. Vol. I (A):55-57.
- 8) WHO (2000). Obesity Preventing and Managing the Global Epidemic. WHO Expert Committee. WHO (Technical Report Series No. 894), 253.