

**EFFECT OF PAPAYA SEEDS ON TOTAL BODY WEIGHT IN FEMALE RABBITS**

Masood Ahmed Unar<sup>1</sup>, Noreen Irum<sup>2</sup>, Farzana Memon<sup>3</sup>, Barkat sheik<sup>4</sup>, Gotam Kumar<sup>5</sup>, Reh Naz sheikh<sup>6</sup>, Ramesh Kumar, Tanwani, Ikram tunio

**ABSTRACT**

**Introduction:** Papaya seeds have been used since ancient times in folklore medicine for treatment of various diseases; nowadays these are researched in a scientific way to standardize their beneficial medicinal and nutritional properties. Seeds contain many bio-active ingredients. Normally, seeds are wasted in spite of their nutraceutical values. This study will help to save the wastage of papaya seeds. This study was planned to assess the pharmacological aspects of seeds of Papaya seeds on total body weight. **Objective:** to determine the effects of papaya seeds on total body weight in female rabbits. **Design of study:** Experimental study. **Place & Duration:** Animal House, Department of Pharmacology and Therapeutics, Peoples University of Medical and Health Sciences for Women Nawabshah-SBA, from Dec 2017 to May 2018. **Materials and Methods:** For this study thirty adult and healthy female rabbits were selected and subdivided into two groups, Group X (Control) n=15, given only fresh hay & water and Group Y (study) n=15, given papaya seeds powder as dose of 500mg once a day along with fresh hay & water provided *ad libitum*, then total body weight were measured on Day 0, 15, 30, 45 & 60. **Results:** Papaya seeds decreased the total body weight of Group-Y (study) rabbits from mean 2.49 kg to 1.67 kg on Day-60 of study (p<0.001). **Conclusion:** Papaya seeds have the promising pharmacological effect in reduction of total body weight, without any significant side effects. Still sophisticated scientific research is required to prove that chemical compound which causes the weight loss.

**Key words.** Papaya seeds, Total body weight.

1. Senior Lecturer (Pharmacology), Peoples University of Medical and Health Sciences for Women, Nawabshah.
2. Assistant professor of Pharmacology, PUMHSW, Nawabshah.
3. Senior Lecturer (Pharmacology), PUMHSW, Nawabshah.
4. Professor of Pharmacology, SMBBMU, Larkana.
5. Assistant professor of Community Medicine, PUMHSW, Nawabshah.
6. Senior Demonstrator, Physiology, PUMHSW, Nawabshah.
7. Professor of Pharmacology, PUMHSW, Nawabshah
8. Associate Prof. Forensic Medicine Khairpur Medical College, Khairpur Mir's, Sindh.

**Correspondence:** Masood Ahmed Unar, Senior Lecturer (Pharmacology), PUMHSW, SBA

Email: fastmasood17@gmail.com

**INTRODUCTION**

Papaya (*Carica papaya*), a member of the family Caricaceae, is a tropical fruit rich in dietary antioxidants (vitamin C, tocopherols, total phenols, and  $\beta$ -carotene) and bioactive phytochemicals with antioxidant activity (benzyl isothiocyanate). Different parts of *C. papaya* (leaves, barks, roots, latex, fruit, flowers, and seeds) are used in folk medication to treat a broad range of diseases ranging from indigestion to cancers.<sup>1</sup>

Obesity is a major problem of all over the world, a burning issue in developed countries and a major risk for the coronary diseases and it predisposes the individuals to resistance of insulin & diabetes type 2.<sup>2</sup> Studies shows that round about 43 million individuals are obese near 24% among them are overweight including children and 18% have central abdominal obesity. Pakistan's quarter of the population falls in obese and overweight category.<sup>3</sup>

Causes of obesity are multiple but most common factor is un due eating habit, genetically transmitted behavior, environmental and metabolic conditions. It occurs when a person consume more calories than it should be burn. Alteration in life style, control on extra eating habit, compliance of

doctors instructions if anybody become obese and taking the medications regularly can prevent the morbidity and mortality which arise from overweight.<sup>4</sup>

Obesity can be decreased through drugs like Sibutramine and orlistat these can decrease the weight approximately.<sup>5</sup> Metformin is used for hyperinsulinemia. And other lot of drugs but all these are not without side effects like bowel urgency, frequent bowel movements, oily evacuation, oily rectal leakage, steatorrhea, dry mouth, upset stomach; changes in appetite; constipation, stomach pain; headache, back pain, joint pain; feeling nervous, dizzy, or depressed.<sup>6</sup> so long term use of these medications make the patients non-compliant of drug therapy.

In this scenario the best alternative is herbal drugs which have none or very less side effects. Now the world trends toward the natural products have been increased. Among all those papaya fruit, its leaves, stem, bark, latex and seeds have been used in folkore medicine since very long times due to promising natural therapy for various diseases.<sup>7</sup>

Researchers have shown that fruit and vegetable consumption (FVC) promotes weight loss and prevents weight gain, thereby reducing risks for chronic health conditions.<sup>8</sup>

Minimum calories, rich in enzymes like papain and lycopene, fibre, antioxidant makes the papaya seeds a good alternative weight losing agent. Papaya also helps in burning the fats, and helps in detoxification prevent the body from unwanted fat deposit.<sup>9</sup>

#### **MATERIAL AND METHOD**

This experimental study was conducted at PUMHSW-Nawabshah from Dec 2017 to May 2018. Total 30 adult healthy female rabbits were used at animal house of Pharmacology Dept of PUMHSW, age of rabbits was b/w 16-24 months, weight was 1 kg to 3 kg, all animals belonged to domestic

rabbit ( *Oryctolagus canaliculus*), they were divided into 2 groups, Group-X (control) and Group-Y (study). Each group consists of 15 animals. Group -X received the fresh water and hay. Group-Y received 500mg of papaya seed powder mixed with 5cc distilled water once daily for 60 days orally along with fresh hay and water.

These two groups were kept in separate rabbit cages in well ventilated atmosphere, with maintained temperature of 27-30° C, 12 hour natural light and 12 hour darkness, with free access to tap water and fresh hay.

#### **Sample Administration & Schedule Of Weight Measurement**

The papayas were bought from the local market in Shaheeh Benzir Abad Sindh. And they were cut in two pieces and seeds were removed. Fresh seeds were washed under running fresh water and seeds were dried under room temperature. Seeds were ground into fine powder using a domestic dry grinder and packed in plastic envelopes as 500mg dose.

#### **Weight Measurement**

Weight of all female rabbits were measured at the beginning of study on Day-0 and subsequently on fortnightly on Day-15, 30, 45 and 60. by using the digital weight machine CWW (USA).

#### **Data Analysis**

The Results of this study were analyzed by using the SPSS (version 19) and data presented as a standard error of mean (M± SEM), and groups were analyzed by applying the student t-test.

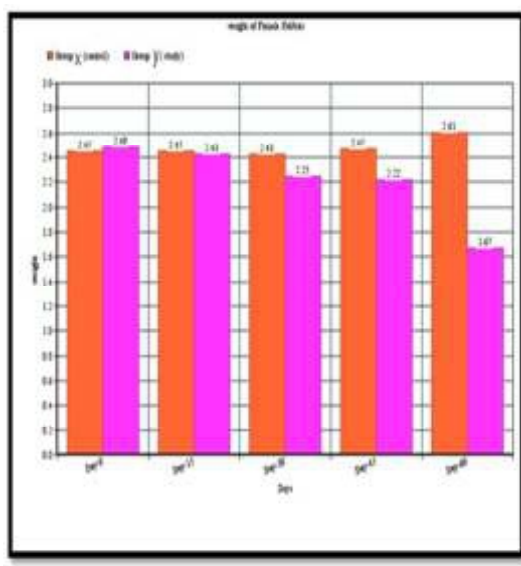
#### **RESULTS**

This study clearly indicates tha Papaya seeds have the property of losing the total body weight. Papapya seeds were given in the dose of 500mg per day (therapeutic dose) for 60 days.

Statisticl analysis showed that total body weight of female rabbits decreased from baseline 2.49 kg to 1.67 kg on Day-60

( $p < 0.001$ ) in Group-Y (study group), where as weight increased in Group- X (control) due to good care of rabbits, shown in (Table1 and Graph 1). Weight started to decrease after 30 days and showed statistically significance up to day 60.

**Graph-1: Shows the comparison of Total Body weight in rabbits**



**Table 1:**

showing the Total Body Weight of female rabbits in Controls and Study from Day-0 to Day-60. This table showing that total body weight of Group-Y (Study) decreased significantly on day 45 and day 60 as compared to controls ( $p < 0.05$ ).

Weight in (kgs)	Group-X (Controls) (n=15)	Group-Y (study) (Seed-fed 500 mg) (n=15)	p-value
	Mean $\pm$ SEM	Mean $\pm$ SEM	
Day - 0	2.45 $\pm$ 0.09	2.49 $\pm$ 0.08	0.686
Day - 15	2.45 $\pm$ 0.08	2.43 $\pm$ 0.07	0.802
Day - 30	2.43 $\pm$ 0.08	2.25 $\pm$ 0.07	0.099
Day - 45	2.47 $\pm$ 0.07	2.22 $\pm$ 0.06	<b>0.013</b>
Day - 60	2.61 $\pm$ 0.07	1.67 $\pm$ 0.06	<b>0.001</b>

## **DISCUSSION**

Papaya fruit is well established for its splendid medical and nutritional properties. That's why it is called as Nutraceutical fruit<sup>1</sup>. Papaya seeds contain a lot of essential elements and vitamins which have been studied and utilized in animals & human, in the form of extracts of various strengths.

A study by African researchers on rats, said that *Carica papaya* reduced the body weight in a dose-dependent manner, although this reduction was not significant. This reduction in body weight could be understandable by observing the findings from this study conducted at College of Health Sciences, Nigeria showed that *Carica papaya* causes inhibition of nutrient absorption from the gastrointestinal tract and suppression of the appetite are most likely reasons for the reductions in body weight.<sup>10</sup> Our study also showed weight reduction in the dose of 500mg/day from Day-45 to end of the study on Day-60. with significant  $p < 0.05$ .

An Indian study showed weight loss in rats when papaya seed along with treatment of anti-diabetic drugs given. Weight loss was statistically significant from  $189 \pm 8.78$ kg to  $193 \pm 10.37$ kg ( $p < 0.01$ ) when compared with diabetic controls without administration of the papaya seed extract.<sup>11</sup>

An American researcher studied the effects of

Benzyl isothiocyanate on fatty male mice, as this compound found in papaya seeds in reasonable quantity, during this study the consumption of food, total body weight were recorded, insulin and glucose tolerance tests were also carried out. This compound was injected intraperitoneally 2 times per week. Then samples of tissues and serum were tested by using the analytical procedures of serum biochemistry, gene expression and histology of tissue specimen to define the effects of benzyl isothiocyanate a treatment on glucose, lipid metabolism and processes involved in inflammation. He concluded that Benzyl isothiocyanate decreases the metabolism of fat in the body, in consequences decrease the total body weight. So papaya seeds can be considered for management of the obesity and decreasing the bad lipids in the body after the finding of that particular compound which is responsible for this effect. In our study this finding of weight loss with papaya seeds was also experienced.

### CONCLUSION

The papaya seeds decreased the total body weight of female rabbits, without any major systemic side effects .Papaya seed consumption offers a cheap, natural, harmless, readily available mono-therapy and preventive strategy for lowering the weight. More sophisticated scientific studies are required for authentication of seeds for human use.

### REFERENCES

1. Elisa Panzarini, Majdi D wikat, StefaniaMariano, Cristian Vergallo, and Luciana Dini Administration Dependent Antioxidant Effect of *Carica papaya*. Seeds Water Extract Evidence-Based Complementary and Alternative Medicine, Volume 2014.
2. Xu, Shumei, and Ying Xue. "Pediatric obesity: Causes, symptoms, prevention and treatment." *Experimental and therapeutic medicine* vol. 11,1 (2016): 15-20.
3. Fariha Hasan, Bilal Hasan. Is obesity endemic to Pakistan? *Jpma*. Vol.67, No.10, October2017.page 1641.
4. Sahoo, Krushnapriya et al. "Childhood obesity: causes and consequences." *Journal of family medicine and primary care* vol. 4,2 (2015): 187-92.
5. Mancini, Marcio C, and Alfredo Halpern. "Orlistat in the prevention of diabetes in the obese patient." *Vascular health and risk management* vol. 4,2 (2008): 325-36.
6. Araújo JR, Martel F. Sibutramine effects on central mechanisms regulating energy homeostasis. *Curr Neuropharmacol*. 2012 Mar;10(1):49-52.
7. Asadullah ,Asif Ahmed, Mohan Perakash Maheshwari, Farhat Jahan .Effect Of Papaya Seeds On Quantitative Hemoglobin Analysis In Animal Model. *MC Vol. 22 - No.1 - 2016 ( 33-37 )*
8. Arnotti K, Bamber M'Fruit and Vegetable Consumption in Overweight or Obese Individuals: A Meta-Analysis. *West J Nurs Res*. 2019 Jun 29.193945919858699.
9. Zhou K, Wang H, Mei W, Li X, Luo Y, Dai H. Antioxidant activity of papaya seed extracts. *Molecules*. 2011 Jul 25;16(8):6179-92.
10. Nwaangwa EK, Okoye E1,andUgoji AE. A Study of Haemato-Stimulatory Effects of Graded Dose Of Aqueous Carica Papaya Seed Extract In Wistar Rats *Research journal of pharmaceutical, biological and chemical sciences*. 2013; 4 (1):129-135.
11. YasmeenManiyar, PrabhuBhixavatimath. Antihyperglycemic and hypolipidemic activities of aqueous extract of Carica papaya Linn. Leaf in alloxan-induced diabetic rats.*J Ayurveda Integr Med*.Apr-Jun2012; 3(2): 70–74.
12. Sary Alsanea. BITC and S-Carvone Restrain High-Fat Diet-Induced Obesity and Ameliorate Hepatic Steatosis and Insulin Resistance. *Pharmaceutical Research*. November 2017; 34(11): 2241–2249.