

# Medicinal and biological importance of pumpkin seeds and its impact on weight

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## ABSTRACT

**Aim:** To evaluate the pharmacological effects of pumpkin seeds in correlation to weight gain in rabbits. **Methodology:** After observing as standard inclusion and exclusion criteria, thirty healthy adult rabbits recommended in study. Calculated amount 250 mg and 500 mg of powder of pumpkin seeds given. 1<sup>st</sup> analysis denoted as day zero. Afterward more analysis were taken twice monthly for sixty days. The blood specimens passed immediately to the DR Lab by the side at the PUMHS Nawabshah. CBC analyzed using an automatic hemoglobin analyzer. Data were statistically evaluated in groups as mean by t-test and by SPSS version 21.0. A P value of 0.05 for all comparisons counted significant. **Results:** While comparing study groups with control, the mean Haemoglobin, RBCs and Platelets value at day zero were established as non-significant statistically. TLC and Weight means were significant statistically. A rising boost observed on further readings taken in all Hematological parameters. When compared with control, all the interpretation was highly significance statistically except weight which remains non-significant statistically. **Conclusion:** Pumpkin seeds can be replaced by ordinary method as a best plant food supply for improving hematological markers. It bears no any side effect of weight gain or patients non-cooperation like with medical therapy because of its high cost or side effects.

**Keywords:** Biological, Rabbits, Haematological ,Pumpkinseed, Medicinal plant

## 1. INTRODUCTION

Pumpkin seeds, also known as pepitas, are dark green seeds that are flat and covered with a white-yellow shell.<sup>1</sup> It is known from centuries.<sup>2</sup> Pumpkin seed is popular food in American ethnic groups. From there, pumpkin seeds became familiar and reach to globe by marketing and searching over several centuries.<sup>3</sup> The seeds have a flexible, rubbery consistency and a sweetish, nuts like flavor.<sup>4</sup>

Pumpkin seeds have been established containing numerous biological active components.<sup>5</sup> These are also rich in protein and oil and popular as a precious oil seed full of protein.<sup>6</sup> The oil obtained from pumpkin seeds is good enough and healthful. It contains especially omega-3 fatty acids.<sup>7</sup> They are loaded with phytosterols<sup>8</sup>, polyunsaturated fatty acid,<sup>9</sup> antioxidant vitamin carotenoids, tocopherol,<sup>10,8</sup> trace element zinc, iron and magnesium.<sup>11,12</sup> Pharmacologically it is known for antifungal,<sup>13</sup> antidiabetic, antibacterial, anti-inflammatory actions<sup>14</sup>, and as antioxidant.<sup>8</sup> Furthermore also enriched

with amino acids such as tryptophan, lysine, methionine, tyrosine and also with iron.<sup>15</sup> Weight gain is a common result of prolonged nutrient use.

Pumpkin seeds contain 31.48% crude fiber and are a good fiber source.<sup>16</sup> Its flour is gluten free, so it may be suggested for patient with gluten intolerance.<sup>15</sup> Pumpkin seed flour has also been used to enhance the nutritional status of children with undernourished.<sup>17</sup> In current years, Pumpkin had acknowledged note worthy consideration due to its nutrients and healthiness advantage.<sup>18</sup>

Keeping in sight the effects of medications on weight gain used for to improve hematological and nutritional status, this study proposed for the interpretation of pumpkin seed effect on enhancing low hematological markers in correlation with weight gain on rabbits.

## 2. MATERIAL AND METHODS

This experimental study was conducted on rabbit in an animal house located at Peoples University of Medical and Health Sciences in Nawabshah during the period from January to March 2020. thirty (30) healthy adult rabbits were enrolled for the study after maintaining inclusion and exclusion criteria such as standard by age of 16- 24 months and 1.5 - 2.5 kg in weight of the same genus and species. Suffering from any illness, under age, under weight and gravid rabbits were disqualified for study.

These rabbits were indiscriminately distributed into three groups viz A, B, and C, keeping 10 rabbits in each group. Control group A kept on fresh hay and water only. Study groups B and C along with that were given 250 mg and 500 mg of the powder of pumpkin seed everyday individually. Rabbits were fed in a hygienic conditions. The powder mixed in 10 cc stopcock water and administered into the rabbit's mouth. At the time of sampling, weight of rabbits were taken on a weighting machine (compact, HYTEK).

Blood samples were taken at a uniform level. The first sample was identified as day 0. Subsequently, samples were drawn every two weeks 15<sup>th</sup>, 30<sup>th</sup>, 45<sup>th</sup> and 60<sup>th</sup> day. The sample of blood drawn by veni puncture in the ear and subsequently transferred a tube containing anticoagulant (EDTA) for CBC testing. These samples were analyzed in the laboratory of DR Lab PUMHSW Nawabshah. For testing an automatic hemoglobin analyzer (Nihan Kohden Mek-6420 k, Japan) was used. Data were statistically evaluated in groups as means by t-test and by SPSS version 21.0. A P value of 0.05 for all comparisons counted significant..

## 3. RESULTS

On day 0 erythrocytes, hemoglobin, platelets and TLC mean values found elevated in control group as compared to study groups B and C. Whereas mean values of weight were highly significant statistically in study the groups comparing with control. This provides base for assessment of the results for those with lower hematological parameters in relation to weight gain in study groups (Table 1).

At day 0, Haemoglobin mean value was non-significant statistically in the study group A and B differentiated with the control group. Consequently an enhancement in

mean hemoglobin value in study groups noticed in all highly succeeding readings taken after two weeks. All these observations recognized as statistically significant when differentiated with control (Table 1).

From day 15 to 60 collective statistically significant increase in haemoglobin, RBCs, Platelets and TLC mean values noticed in study groups. Whereas in group C statistically significant increase in haemoglobin noticed and collective increase in mean RBCs and TLC also seen but these findings stand non-significant statistically (Table 2,3).

It was observed that the mean values of weight on day 0 were significant in groups B and C compared to the control group. When compared with the observations of study groups with the control group, it was found to be not statistically significant (Table 4). Figure 1 reveals the graphic illustration of the aforementioned observations.

**TABLE 1: ASSOCIATION OF PARAMETERS OF GROUPS A AND B ON DAY 0 WITH CONTROL (n=30)**

<b>Parameter</b>	<b>Group A (Control) (n 10)</b>	<b>Group B (n 10)</b>	<b>Group C (n 10)</b>
Haemoglobin (%)	11.08±0.14	10.47±0.31	10.93±0.17
RBCs (million/cmm)	5.52±0.11	5.12±0.15	5.19±0.18
TLC (/cmm)	9600±494.86	6810±964.30*	8600±514.24
Platelets (/cmm)	211400±21191.29	257600±42663.07	239200±8696.0
Weight (kg)	1.34±0.06	1.55±0.06	1.58±0.04

**TABLE 2: RELATIONSHIP OF PARAMETERS OF GROUP A WITH GROUP B (STUDY GROUP) FROM DAY 0 TO 60 (n=30)**

Parameter	Day 0	Day 15	Day 30	Day 45	Day 60
Haemoglobin (%)					
Group A	11.08±0.14	11.29±0.31	11.67±0.11	12.22±0.13	12.19±0.13
Group B	10.47±0.31 <sup>NS</sup>	12.60 ±0.31 <sup>***</sup>	13.17±0.22 <sup>***</sup>	13.45±0.17 <sup>***</sup>	13.76±0.21 <sup>***</sup>
RBCs (million/cmm)					
Group A	5.52±0.11	5.66±0.10	5.72±0.11	6.02±0.17	6.12±0.17
Group B	5.12±0.15	6.48±0.13 <sup>***</sup>	6.49±0.09 <sup>***</sup>	6.28±0.09 <sup>**</sup>	6.84±0.23 <sup>**</sup>
TLC (/cmm)					
Group A	9,600±494	9,730±398	9,580±474	10,330±882	10,170±705
Group B	6,810±964*	7,800±366 <sup>**</sup>	8,030±343*	8,950±404 <sup>NS</sup>	8,870±263 <sup>NS</sup>
Platelets (/cmm)					
Group A	211,400±21191	202,300±15898	204,900±18723	226,200±34584	215,700±29520
Group B	257,600±42663	262,100±18446 <sup>**</sup>	308,800±24017 <sup>***</sup>	308,000±18842 <sup>**</sup>	319,900±24664
Weight (Kg)					
Group A	1.34±0.06	1.40±0.05	1.45±0.05	1.53±0.05	1.60±0.04
Group B	1.55±0.06 <sup>**</sup>	1.42±0.04	1.53±0.03	1.53±0.03	1.63±0.06

**TABLE 3: COMPARISON OF PARAMETERS OF GROUP A (CONTROL) WITH GROUP C (STUDY GROUP) FROM DAY 0 TO 60**

(n=30)

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Parameter	Day 0	Day 15	Day 30	Day 45	Day 60
Haemoglobin (%)					
<b>Group A</b>	11.08±0.14	11.29±0.31	11.67±0.11	12.22±0.13	12.19±0.13
<b>Group C</b>	10.93±0.17 <sup>NS</sup>	12.37±0.14 <sup>aaa</sup>	12.46±0.14 <sup>aaa</sup>	13.17±0.21 <sup>aaa</sup>	13.48±0.20 <sup>aaa</sup>
RBCs (million/cmm)					
<b>Group A</b>	5.52±0.11	5.66±0.10	5.72±0.11	6.02±0.17	6.12±0.17
<b>Group C</b>	5.19±0.18	5.83±0.17	5.90±0.19	5.84±0.23	5.93±0.24
TLC (/cmm)					
<b>Group A</b>	9,600±494	9,730±398	9,580±474	10,330±882	10,170±705
<b>Group C</b>	8,600±514 <sup>NS</sup>	8,820±413 <sup>NS</sup>	8,950±295 <sup>NS</sup>	8,810±263 <sup>NS</sup>	9,580±723 <sup>NS</sup>
Platelets (/cmm)					
<b>Group A</b>	211,400±21191	202,300±15898	204,900±18723	226,200±34584	215,700±29520
<b>Group C</b>	239,200±28696	288,300±2422 <sup>aa</sup>	263,300±21313	290,500±24664	323,400±24083 <sup>aa</sup>
Weight (Kg)					
<b>Group A</b>	1.34±0.06	1.40±0.05	1.45±0.05	1.53±0.05	1.60±0.04
<b>Group C</b>	1.58±0.04 <sup>aaa</sup>	1.53±0.03	1.65±0.05	1.60±0.02	1.66±0.02

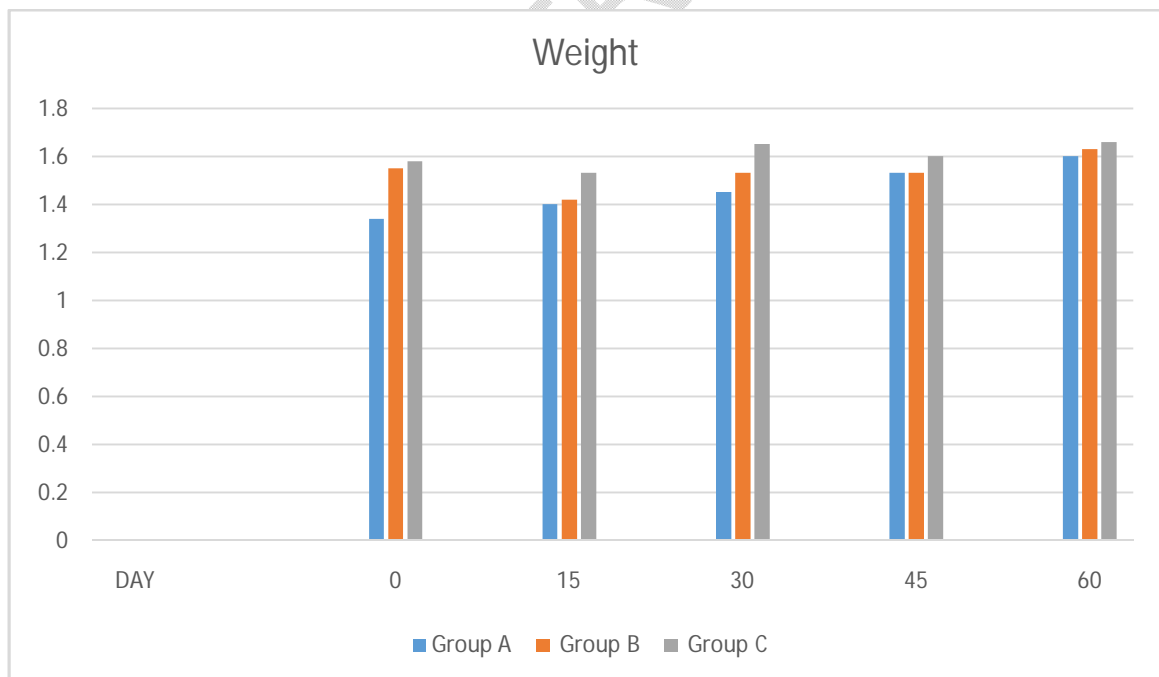
**TABLE 4: COMPARISON OF WEIGHT OF GROUP A WITH GROUP B AND C FROM DAY 0 TO 60**

**(n=30)**

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DAY	Group A (n 10)	Group B (n 10)	Group C (n 10)
0	1.34±0.06	1.55±0.06**	1.58±0.04 <sup>***</sup>
15	1.40±0.05	1.42±0.04	1.53±0.03
30	1.45±0.05	1.53±0.03	1.65±0.05
45	1.53±0.05	1.53±0.03	1.60±0.02
60	1.60±0.04	1.63±0.06	1.66±0.02

**FIGURE 1: COMPARISON OF WEIGHT OF GROUP A WITH GROUP B AND C FROM DAY 0 TO DAY 60**



#### **4. DISCUSSION**

In a growing and interdependent world, the eradication of poverty and malnutrition is a moral obligation and a necessary antecedent to international peace and security.<sup>19</sup> In current years, seeds and nuts have received mounting attention due to the high dietary and remedial significance of their biologically active ingredients.<sup>20</sup> Pumpkin belong to family Cucurbitaceae which is usually cultivated in regions of the world as a vegetable. These grow in the tropics and subtropics. All over the world three types of pumpkin, *Cucurbita pepo*, *Cucurbita maxima* and *Cucurbita moschata* are available.<sup>4,21</sup>

White blood cell count, platelet count, weight and hematological parameters were noted. Weight gain is a common consequence of prolonged use of supplements. In this study, not any significant remarkable weight gain was noticed in study groups kept on pumpkin seed additive at two dissimilar doses, whereas in A group, a remarkable net weight gain noticed, remain on hay and water feeding only. Thus, pumpkin seed may be utilized to improve hemoglobin as well as to strengthen immunity and platelet counting the absence of any side effects of gaining weight. These interpretations establish that pumpkin seed supplementation may be recommended in order to health improvement having no effects on weight gain as seen in ordinary health improvement supplementation.

That findings are in conflict with findings of Cruz et al (2006)<sup>22</sup>, who noticed this effect in rats by oral administration of the seed extract 1000 mg per kg. They also considered utmost dose of 5000 mg per kg as toxic. So despite the remarkable advantages of pumpkin seeds that have been noted, it must be recommended in an optimum extent to save from the harmful effects of pumpkin seed treatment.

#### **4. CONCLUSION**

Pumpkin seed is a good plants food source which can be replenished with traditional methods used for improvement of hematological and nutritional status and to boost immunity and platelet count in many conditions in the absence of any side effects of weight gain or non-compliance with medications because of its side effects or high costs They can also be used routinely to maintain the body's homeostasis, as they contain various vitamins and minerals and biologically active compounds.

#### **Ethical Approval:**

**As per international standard or university standard written ethical approval has been collected and preserved by the author(s).**

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