



EFFECTS ON HAEMATOLOGICAL PARAMETERS OF CUCURBITA PEPO SEEDS IN RABBITS.

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ABSTRACT

BACKGROUND: Medicinal plants chemical constituents affect body systems.^{1,2} Cucurbitaceae belongs to the plant family, generally believed as consisting of melons, cucurbits and pumpkin. **OBJECTIVE:** Assessment of effects of cucurbita pepo (pumpkin) seeds on haematological parameters in rabbits. **DESIGN:** Experimental study. **PLACE:** The study was conducted at the Pharmacology Department PUMHSW Shaheed Benazirabad. **DURATION** 01st Jan 2020 to 31st March 2020. **MATERIAL METHODS:** By observing standard criteria for inclusion and exclusion of rabbits in study. Thirty rabbits were chosen in the study. Calculated quantity of powder of pumpkin seeds as 250 and 500 mgs was given subsequently daily for sixty days to study groups. Zero time had reading marked as day 1st. Thereafter further readings taken after every 15th day for the two months. The samples were assessed at D and R Lab PUMHS Shaheed Benazirabad. Blood CP analyzed through Automatic Hemoglobin Analyser. Data evaluated statistically in groups as means by the correlated pairs T-test and SPSS 22.0 version. P-value upto 0.05 considered significant. **RESULT:** Whilst compared the study groups (B and C) with the control (A) group the mean Hb, RBC, HCT, MCV, MCH and MCHC values on day 0 were found non significant statistically. An increasing increase was observed from day 15 to day 60 in all blood parameters. As compared with the control group, all interpretations were highly statistically significant. **CONCLUSIONS:** Pumpkin seed can be substituted by common methods as good herb food source for the boosting hemoglobin marker. It does not carry side effects of weight increase or non cooperation of patients with medical treatment due to higher cost or having adverse effect.

KEY WORDS: Cucurbita Pepo, Rabbits, Haematological, Pumpkin seed, Medicinal Plant.

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INTRODUCTION

Medicinal plants chemical constituents affect body systems.^{1,2} Cucurbitaceae belongs to the plant family, generally believed as consisting of melons, cucurbits and pumpkin.³ Botanical name of pumpkin is *Cucurbita pepo*. It is known as Kaddu in Pakistan. It has a high give up of about 10-15 fruits for each plant.⁴ In individual culture and developing countries, the plant is customarily used as a medicine⁵ It has gained a restoration for use in the America and Europe.⁶ It is divided on the basis of shape and texture of its stem into different types.⁷ Its flash, leaves, and seeds are packed with nutritional components such as vitamins, minerals, and other biological active compounds⁸ such as proteins, sugars, and fiber.⁹

Pumpkin seed had obtained wide awareness in current time due to its good dietary constitution and health protection value. Seeds are main important portion of the pumpkin but commonly are disposed as discarded. These days pumpkin seed undergo industrial treating and are usually marketed as a salty snack.¹⁰ Xanthopoulou et al (2009)¹¹ affirmed that pumpkin seed is used as supplement in salad, chips and pastry because of its beneficial phytonutrient constituents. Adding the seed is a good dietary alternative to enhance food by-product.¹²

Seeds of the Pumpkin are cheaper and rich in nutrients. Flour fortified with pumpkin seeds is inexpensive and high in nutrients.¹³ Stevenson et al (2007)¹⁴ revealed pumpkin seed is nourishing, spongy, rubbery, sweet food stabilizer. One-quarter pumpkin seeds cup contain 200 cal and 15% to 50% several essential supplements such as protein, iron, zinc, magnesium, manganese. Also valuable fat, vitamins and antioxidants are found in large quantity in the seed.¹⁵ Ranganathan and Selvasbramanian (2012)¹⁶ thought out the immunostimulatory effect of pumpkin seed and stated that it is potentially effective.¹⁵ Keeping in sight in the lethal outcome of low haematological markers the study proposed on pumpkin seeds to observe its effects on this regard.

MATERIALS AND METHOD

The study was carried out on rabbits at Peoples University of Medical and Health Sciences SBA animal house for the duration of 01st Jan 2020 to 31st March 2020. Maintaining standard criteria (inclusion and exclusion), 30 (thirty) rabbits were taken in the study. Female Rabbits of age 1.5 – 2.0 years having weight of about 2 kgs. Ailing,

underage and weight and also pregnant rabbits were disqualified for the study. All selected rabbits were equally (10 rabbits) kept in the groups A, B and C. Group A (control group) was on fresh hay and water. Group B & C (study groups) were on 250 & 500 mgs pumpkin seeds powder appropriately on a daily basis simultaneously and also fed like control (A Group).

Fresh pumpkin seeds grinded into a fine powder. In a plastic wrap powder stored at normal atmosphere. Determined quantity of the powder fed once a day upto 60 days to the corresponding groups. The weight was noted during sampling.

Blood samples were taken at 0, 15th, 30th, 45th and 60th day. After taking from rabbit's ear via venipuncture, shifted to CBC test tube. The samples taken were analyzed at D and R Laboratory PUMHSW SBA. The blood samples analyzed on Automatic Hemoglobin analyser (Nihan-Kohden Mek 6420 k Japan) used.

Data evaluated statistically in groups as means by the correlated pairs T-test and SPSS 22.0 version. P-value upto 0.05 considered significant.

RESULTS:

Initially selected rabbits were in good health in all groups. In study groups no any adverse effect noted. On day Zero (0) in control group hemoglobin was elevated than study groups. From day 15th onwards in subsequent sampling, an improvement in mean hemoglobin values in study groups noticed (Table 1).

From the 15th to the 60th day, there was a statistically significant boost in hemoglobin and RBC mean value in group B, while a statistically significant enhance in hemoglobin was observed in group C, and a collective increase in mean RBCs was also observed but this result is not statistically significant. Figure 1 reflects the graphic image of this analysis.

The mean value of H.C.T and M.C.V become significant statistically on multiple analysis taken after every 15 days. It showed the rising increase in mean H.C.T and M.C.V values although they became respectively non-significant on some analysis as compared to control. Also an increase in the mean values of M.C.H. & M.C.H.C. observed in all successive analyzes in study groups compared to the control group, but it was established as

nonsignificant statistically except for group B at day 30.

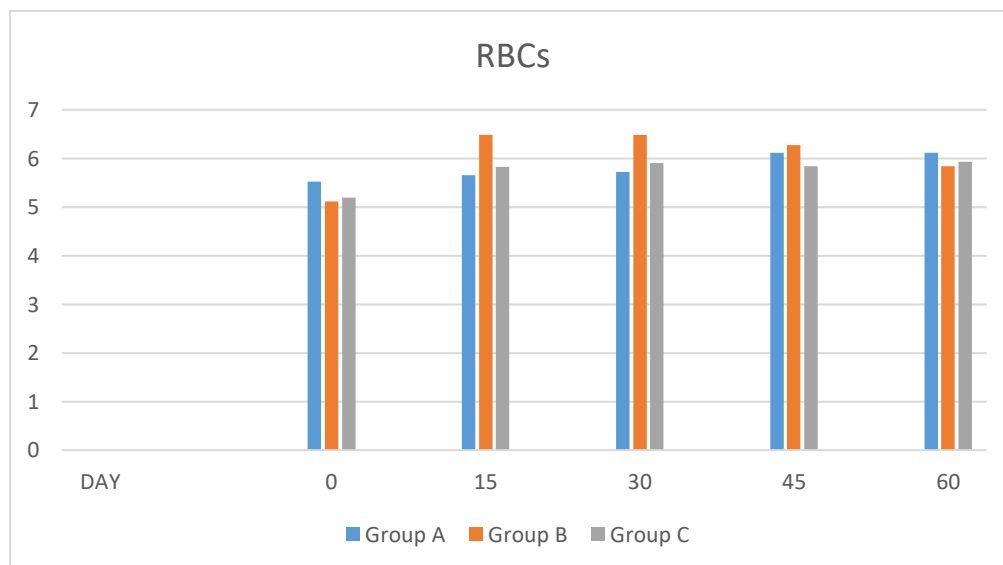
TABLE 1: ASSOCIATION OF HAEMATOLOGICALPARAMETERS OF CONTROL GROUP WITH GROUP B FROM DAY 0 (ZERO) TO 60TH

Parameter	Day 0	Day 15	Day 30	Day 45	Day 60
Haemoglobin (%)					
Group A		11.29±0.31	11.67±0.11	12.22±0.13	12.19±0.13
Group B	11.08±0.14 10.47±0.31	12.60 ±0.31***	13.17±0.22 ***	13.45±0.17 ***	13.76±0.21 ***
RBCs (million/cmm)					
Group A		5.66±0.10	5.72±0.11	6.02±0.17	6.12±0.17
Group B	5.52±0.11 5.12±0.15	6.48±0.13***	6.49±0.09***	6.28±0.09**	6.84±0.23**
HCT (%)					
Group A		34.11±0.47	34.10±0.80	36.11±0.66	36.81±0.66
Group B	33.48±0.54 32.08±0.82	38.69±0.82***	38.46±0.74***	37.53±0.48	36.44±0.82
MCV (fl)					
Group A		58.24±0.74	59.88±1.17	58.04±0.96	58.94±0.96
Group B	60.38±1.19 62.84±1.02	59.65±0.76	60.38±0.65	59.76±0.70	62.85±1.53**
MCH (pg)					
Group A		19.75±0.20	20.07±0.24	20.36±0.78	20.46±0.78
Group B	20.16±0.25 20.48±0.14	19.42±0.28	19.33±0.34	20.08±0.36	21.25±0.53
MCHC (g/dl)					
Group A		32.91±0.32	33.72±0.27	33.46±0.24	33.46±0.24
Group B	32.89±0.32 32.66±0.55	32.55±0.17	32.47±0.24**	33.58±0.36	33.80±0.17

TABLE 2: ASSOCIATION OF HAEMATOLOGICALPARAMETERS OF CONTROL GROUP WITH GROUP C FROM DAY 0 (ZERO) TO 60TH

Parameter	Day 0	Day 15	Day 30	Day 45	Day 60
Haemoglobin (%)					
Group A		11.29±0.31	11.67±0.11	12.22±0.13	12.19±0.13
Group C	11.08±0.14 10.93±0.17	12.37±0.14 ^{ΔΔΔ}	12.46±0.14 ^{ΔΔΔ}	13.17±0.21 ^{ΔΔΔ}	13.48±0.20 ^{ΔΔΔ}
RBCs (million/cmm)					
Group A		5.66±0.10	5.72±0.11	6.02±0.17	6.12±0.17
Group C	5.52±0.11 5.19±0.18	5.83±0.17	5.90±0.19	5.84±0.23	5.93±0.24
HCT (%)					
Group A		34.11±0.47	34.10±0.80	36.11±0.66	36.81±0.66
Group C	33.48±0.54 33.26±0.50	37.09±0.66 ^{ΔΔΔ}	36.97±0.64 ^{ΔΔ}	36.44±0.82	36.60±0.87
MCV (fl)					
Group A		58.24±0.74	59.88±1.17	58.04±0.96	58.94±0.96
Group C	60.38±1.19 63.92±1.42	62.71±1.48 ^{ΔΔ}	64.88±1.51 ^{ΔΔ}	62.85±1.53 ^{ΔΔ}	62.82±1.58
MCH (pg)					
Group A		19.75±0.20	20.07±0.24	20.36±0.78	20.46±0.78
Group C	20.16±0.25 21.00±0.50	20.60±0.49	21.36±0.60	21.25±0.53	21.51±0.55

FIGURE 1: EVALUATION OF RBCS OF CONTROL GROUP (A) WITH STUDY GROUPS B AND C FROM DAY 0 (ZERO) TO DAY 60TH



DISCUSSION

Pumpkins are included into the cucurbit family. Among the different species, the most are utilized as food. Its seed have valuable nutritional and medicinal value.¹⁷ The nutritional and health importance of pumpkin has caught the attention of dietician in the past few years.¹⁸ Nutritionally is comprised of biologically active compounds.¹⁹ Pharmacologically has significance and can be used as an antioxidant, immune stabilizer, hematopoietic, anticancer, anti-inflammatory and so on.²⁰ The presence of WBCs, platelet, weight and also hemoglobin indices observed. Initially on day 0, hemoglobin and red blood cells in the group A was high as compared group B & C. On successive readings on day 15th, 30th, 45th and 60th a significant rise was noted in study groups. In group B at successive interpretation, a growing raise in mean RBCs value observed. While a collective increase in mean RBC values in group C was observed on all following days, it was established as non-significant statistically contrast to the group A (control). The mean H.C.T and M.C.V. values found to be statistically significant in study group B & C compared to the A group. It showed the collective increase in mean values. Therefore despite the late raise in mean MCV values in group B, a statistically significant increase was noticed in groups B and C as comparing with the A group. Although an increase in the mean values of M.C.H. and M.C.H.C. observed in all successive analyzes in study groups compared to the control group, it was established as non-significant statistically excluding group B at day 30.

When compared group B & C put up on pumpkin seed on a dose of 250 and 500 mgs correspondingly, except RBCs nonsignificant dissimilarity in hematological parameters detected. Therefore the necessary result might be acquired at low dose of 250 mg/day. These explanations are compatible with the study under Yongabi et al 2014²¹ shown the medicinal significance of pumpkin as an anti-anemic by enhancing haematological markers. Adepoju and Adebajo (2011)²² too noted a rise in hematological assessments. These explanations are similarly consistent to the results of Obeagu EI et al (2014),²³ who noticed a significant increase in Haemoglobin percentage and Packed Cell Volume. Lawal et al (2015)²⁴ also established an increase in hematological variables in mice maintained on pumpkin. Also these remarks are in consistent with Malgwi et al (2014).²⁵

CONCLUSION:

Pumpkin seeds are a good herb food source. It might be substituted for the customary methods applied to obtain improved blood markers in cases of nutritional deficiency disorders, exclusive of side effects of weight gain or refusal with medical treatment. Further study in humans is advocated to be conducted in humans. Being economical and no side effects, patient adoption will be more.

ETHICS APPROVAL: The ERC gave ethical review approval.

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin.

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CONFLICT OF INTEREST: No competing interest declared.

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