



International Journal of Research in Pharmacology & Pharmacotherapeutics



ISSN Print: 2278-2648
ISSN Online: 2278-2656

IJRPP | Vol.5 | Issue 2 | April - June - 2016
Journal Home page: www.ijrpp.com

Research article

Open Access

Effect of panchagavya with neem to promote green gram and analyse the Biochemical changes

Dr. Jayachitra J^{1*} and Vanitha R²

¹ Post Graduate Department of Biochemistry, D. G. G. Arts College (W), Mayiladuthurai, 609 009, Tamilnadu, India.

²P.G Student, Department of Biochemistry, D.G.G Arts college (W), Mayiladuthurai, 609 001, Tamilnadu, India.

*Corresponding author: Dr. Jayachitra J

ABSTRACT

To investigate the relationship between panchagavya with Neem and normal plant in green gram. The level of carbohydrate, protein, lipid, and calcium and phosphorous of the green gram seed as influenced by the application of panchagavya with neem. The level of carbohydrate was gradually increased from low concentration to high concentration. Among the concentration tried, the maximum amount was found in 15% (carbohydrate, 10.4 g) and 20% (carbohydrate 14.2g) when compared to control. The levels of protein were slightly elevated from low concentration to high concentration. Among the concentration tried, the maximum amount were found in 15% (protein 11.1 g) and 20% (protein 13.4 g) when compared to control. The level of fat was gradually increased from low concentration to high concentration. Among the concentration tried, the maximum amount was found in 15% (fat 26.8g) and 20% (fat 29.7g) when compared to control. The results of calcium were slowly elevated from low concentration to high concentration. Among the concentration tried, the maximum amount was found in 15% (calcium 9.2g) and 20% (calcium 11.3g) when compared to normal. The level of phosphorous was gradually increased from low concentration to high concentration. Among the concentration tried, the maximum amount was found in 15% (phosphorous 21.2g) and 20% (phosphorous 21.6g) when compared to control.

Keywords: Panchagavya, Green gram and Biochemical Changes.

INTRODUCTION

The current global scenario firmly emphasizes the need to adopt eco-friendly agricultural practices of sustainable agriculture. Chemical agriculture has made an adverse impact on the healthcare of not only the soil but also the beneficial soil microbial communities and the plants cultivated in these soils

In India, organic farming was a well-developed and systematized agricultural practice during the past and this 'ancient wisdom' obtained through Indian knowledge systems such as 'Vedas' specify the use of 'panchagavya' in agriculture for the health of soil, plants and humans.

Panchagavya is a foliar nutrition prepared by organic growers of Tamilnadu and widely used for various agricultural and horticultural crops. In Sanskrit, panchagavya means a combination of five products obtained from the cow. When su Green gram (*Vigna radiata* L.) is an important legume of Asian origin, is widely cultivated in the countries of Asia Australia and Africa continents^[1]. It is an important summer pulse crop many south Asian countries, including India^[2]. Green gram is used as whole or spilt seeds as Dal (Soup) but in other countries sprouted seeds are widely used as vegetables. It ably mixed and used, these have miraculous effects.

Mudga (green-gram) sprouts for sandwiches or salads. Wash them well before you eat them. Mudga (green-grams) are a low-calorie food with only 30 calories in a 1-cup serving. They also provide nearly 2 g of dietary fiber in each cup. Dietary fiber comes from the parts of plant foods that your body cannot digest; a high-fiber diet can help you control our weight because foods with fiber tend to be more satisfying so you eat less. A benefit of mudga (green-gram) is that they are nearly sodium-free, with only 6 mg per cup of raw sprouts. A high-sodium diet can increase your risk for high blood pressure; the 2010 Dietary Guidelines recommend staying under 2,300 mg per day, based on a 2,000-calorie diet. One cup of mudga (green-gram) also contains 155 mg of potassium. Potassium from fruit, dairy products, beans, whole grains can aid in blood pressure control.

In the present study a preliminary attempt has been made to find out the effect of panchagavya spray on the biochemical and yield parameters of Green gram (*Vigna radiata* L.)

MATERIALS AND METHODS

Plant Materials

Vigna radiata L. Seeds were washed, shadow dried and subjected to pulverization to get a coarse powder.

Preparation of Ethanol Extract

The powdered seeds of about 20g were extracted with alcoholic in a soxhlet apparatus. Then, the extract was evaporated in a rotatory vacuum Evaporator at 40°C under reduced pressure. The crude extract of about 13g was obtained which is equivalent to about 20% of total extraction.

Chemical

All of the chemicals were of analytical grades and were obtained from Central Drug House Pvt. Ltd (New Delhi, India).

Preparation with Of Panchagavya Neem extraction

Cow dung mixed with water	: 500ml
Cow urine	: 300ml
Cow milk	: 200ml
Cow curd	: 200ml
Cow ghee	: 100ml
Distilled water	: 300ml
Coconut water	: 150ml
Neem extraction	: 250ml

All the products mentioned above should be put in mud pot, mixed Properly and kept open for 10 days. It should be mixed every day. It is ready for use in 10 days' time. The pH of the medium maintained at 6.7. The green gram seeds were immersed in panchagavya a with neem extraction.

The first set (A) contains the control. The second set (B) contains 5% panchagavya with neem extraction applied seeds. The third set (c) contains 10% panchagavya with neem extraction applied seeds. The fourth set (D) contains 15% panchagavya with neem extraction applied seeds. The fifth set (E) contains 20% panchagavya with neem extraction applied seeds. These are five types of panchagavya with neem extraction applied seeds. (ABCDE) growth rate at 51 days of plants, and over all yield quality, biochemical changes panchagavya with neem applied plant yield were recorded. The present investigated has been made to modify various nutritional substances present in capsicum. To apply the Panchagavya with neem extraction to the green gram to assessment the nutritional changes in green gram.

Biochemical Study

For our study various nutritional substances such as carbohydrate, protein, lipid, calcium and phosphorous present in panchagavya with Neem applied in green gram. Carbohydrate was estimated by Anthrone method (Roe, 1955)

Protein was estimated by the Lowry's method (Lowry et al., 1951). Estimation of fat in green gram was performed by the Back method (1978)

Phosphorous was determined by the method of Fiske and subarea (1925).

The calcium level in the extract was estimated by titrametic method of clark colip(1925)

RESULTS AND DISCUSSION

The present study has analysed the relationship between panchagavya with Neem and normal plant in green gram. The following results pertaining to the study were discussed here,

S.NO	TREATMENT	CORBOHYDRATE Mg (100mg)	PROTEIN Mg (100mg)	FAT Mg (100mg)	PHOSPHOROS Mg (100mg)	CALCIUM Mg (100mg)
1	C	10.0	5.4	12.8	9.1	6.0
2	5%	7.8	7.0	18.2	13.0	6.8
3	10%	8.2	9.2	22.4	16.8	8.0
4	15%	10.4	11.1	26.8	21.2	9.2
5	20%	14.2	13.4	29.7	21.6	11.3
	MEAN	10.15	10.175	24.275	18.4	8.825

Table 1 shows the level of carbohydrate, protein, lipid, and calcium and phosphorus of the green gram seed as influenced by the application of panchagavya with neem.

Table 1 and Fig. 1 Represents the level of carbohydrate was gradually increased from low concentration to high concentration.

Among the concentration tried, the maximum amount was found in 15% (carbohydrate 10.4 g) and 20% (carbohydrate 14.2g) when compared to control.

Mean value for carbohydrate (mg/100mg)

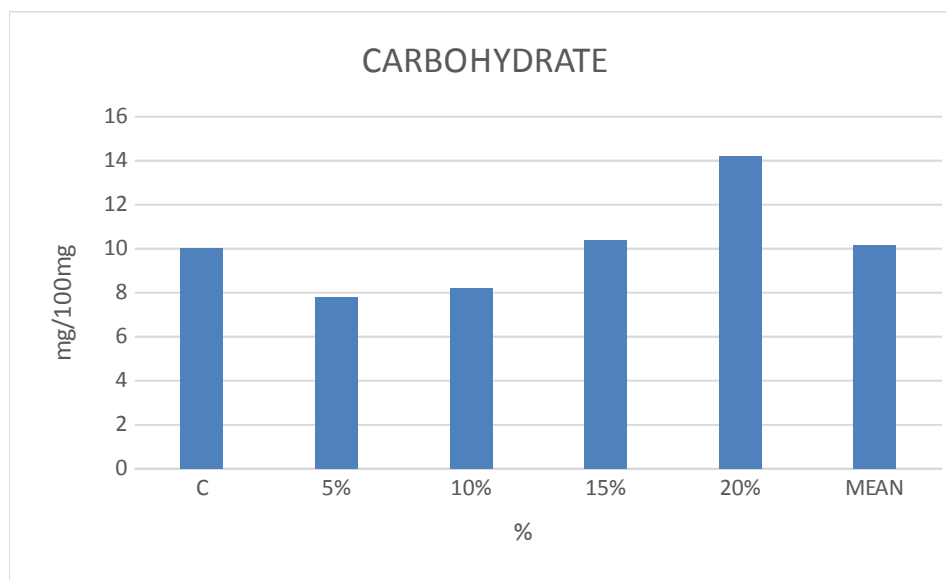


Fig value: 1

Table 1 and Fig 2 Shows the levels of protein were slightly elevated from low concentration to high concentration. Among the concentration tried, the

maximum amount were found in 15% (protein 11.1 g) and 20% (protein 13.4 g) when compared to control.

Mean value for protein (mg/100mg)

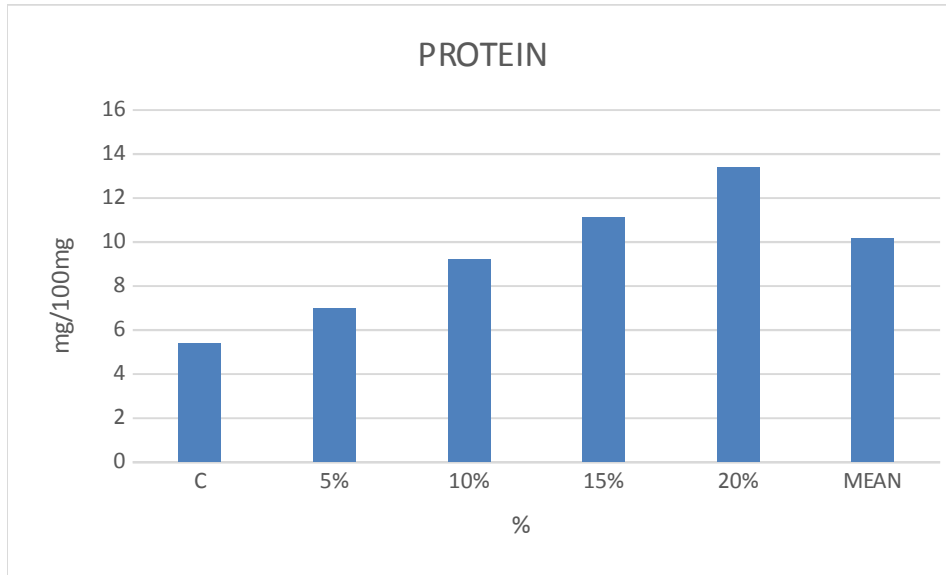


Fig value: 2

Table 1 and Fig 3

Represents the level of fat was gradually increased from low concentration to high

concentration. Among the concentration tried, the maximum amount was found in 15% (fat 26.8g) and 20% (f at 29.7g) when compared to control.

Mean value for fat (mg /100mg)

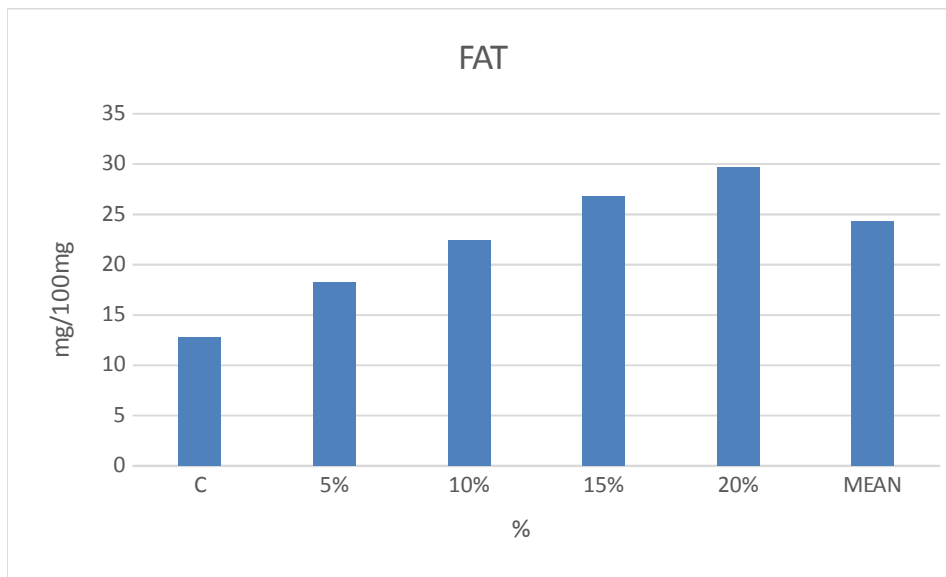


Fig value: 3

Table 1 and Fig 4

Represents the level of phosphorous was gradually increased from low concentration to high concentration. Among the concentration tried, the

maximum amount was found in 15% (phosphorous 21.2g) and 20% (phosphorous 21.6g) when compared to control.

Mean value for phosphorous (mg/100mg)

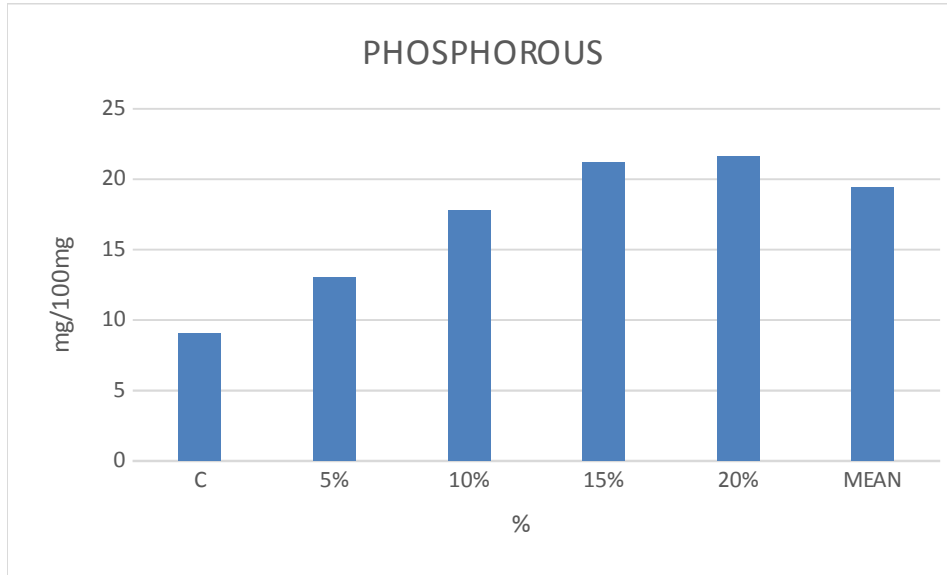


Fig value 4

Table1 and Fig. 5

Provides the result of calcium were slowly elevated from low concentration to high

concentration. Among the concentration tried, the maximum amount was found in 15% (calcium 9.2g) and 20% (calcium 11.3g) when compared to normal.

Mean value for calcium(mg/100mg)

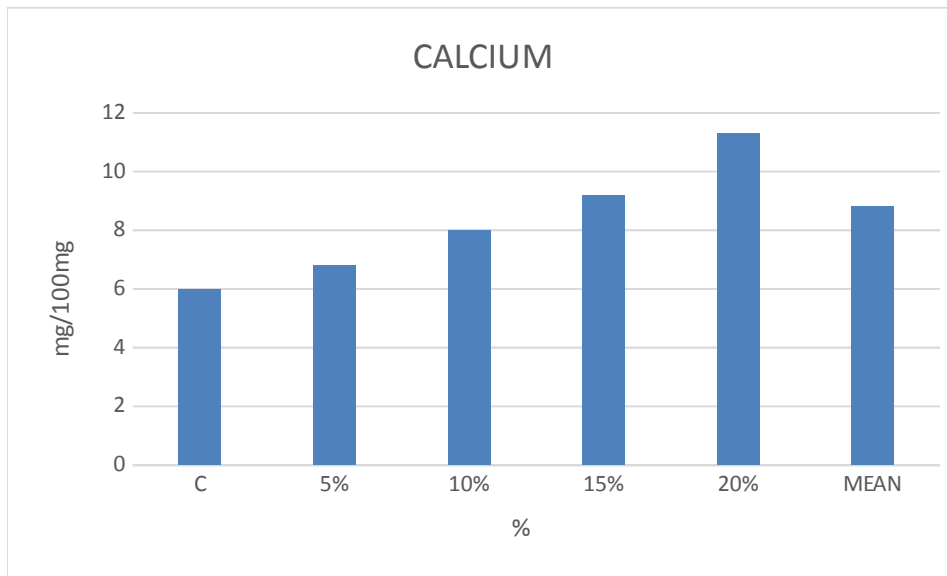


Fig value:5

Phytochemical Analysis

Ethanol extract of seeds of (*Vigna radiate L.*) Were taken and analysed to find the presence of various phytoconstituent (Table 1). The result

showed positive respond to the phytoconstituents like carbohydrate, glycosides, flavonoids, Terpenoids, Resins, Phlobatanains, protein and amino acid. Both extracts of seeds of (*Vigna radiate L.*)

Table: 1 Phytochemical screening of (*Vigna radiate L.*) Phytochemical analysis of Ethanol extract of (*Vigna radiate L.*).

S. no	Name of phytoconstituents	Ethanol extract	
		Observation	Inference
1	Carbohydrate	Reddish yellow or green colour	+
2	Steroids	Green colour	-
3	Tannins	White precipitate	-
4	Protein	Pink colour	+
5	Phenols	White precipitate	-
6	Amino acids	Purple colour	+
7	Alkaloids	White or pale precipitate	+
8	Glycosides	Yellow colour	+
9	Flavonoids	Reddish pink or dirty brown colour	+
10	Terpenoids	Reddish brown colour	+
11	Resins	Orange to Yellow colour	+
12	Phlobatanains	Red precipitate	+

^[3] Also reported that the effect of mulching materials on agronomic characteristics, pests of pepper and their natural enemies population. This observation in the present study supports the previous findings by ^[4], ^[5] also reported that the available sulphur content in soils increased with increase in sulphur levels from 0 to 40kg S ha⁻¹ after the harvests of mooring. ^[6] have reported that the efficacy of sulphur sources on green gram (*Vigna radiate L.*) in red and Lateritic soil of west Bengal. ^[7] have reported that the effect of sulphur on growth and yield of green gram [*Vigna radiata (L.) Wilczek*]. ^[8] Reported that green gram yield increased with levels of P and S fertilizers. P at 60 kg P₂O₅ and S at 40 kg ha⁻¹ gave the highest number of pods per plant, number of seeds per pod, 1000-seed weight, seed yield, net return and net return / rupee invested.

^[9] have reported that the response of kharif green gram (*Vigna radita L. wilczek*) to sulphur and phosphorus fertilization with and without biofertilizer application. ^[10] have reported that the Panchagavya gritha – a promising drug in ayurvedic psychiatry.

According to panchagavya also known to contain biofertilizers such as Azospirillum, Azotobactor, phosphobacteria and Pseudomonas were found besides Lactobacillus in Panchagavya ^[11]. Besides these, growth regulatory substances such as Indole Acetic Acid (IAA), Gibberlic Acid (GA3), Cytokinin and essential plant nutrients from

Panchagavya ^[12] Which caused a tremendous influence on the growth rate in *Alium cepa* and Panchagavya at 30 days of age recorded better proposition of chemical and microbial composition favourable for utilization as growth promoter and panchagavya did not have direct antibacterial activity ^[13]. ^[14] opined that the beneficial microorganisms from panchagavya and their establishment in the soil improved the sustainability of agriculture as the microorganisms present in the rhizospheres environment around the roots influence the plant growth and crop yield.

Studies have shown increased yields where the farmer has used organic practices ^[15] in crops like chilli ^[16], moringa green gram ^[17] and French bean ^[18].

The cost-benefit to farmers was greatest when Panchagavya was used as a growth promoter and proved as the cheapest, while Amrit Pani, and Bokashi were the costliest alternative input and Higher netreturns and B:C ratio were evidenced when panchagavya was included in the nutrient management strategies in crops like rice ^[11] green gram, and black gram ^[19]. Panchagavya enhances the growth and vigour of crops, inducing resistance to pests and diseases and improving the keeping quality of vegetables and fruits ^[20]. Panchagavya spray was also reported as effective on all the crops than the recommended nutrients and growth regulators (RFS) in terms of higher growth and productivity ^[17].

CONCLUSION

The present study was constructed to assess the biochemical changes in panchagavya with Neem to green gram. The consequence of the reflects are bridged as follows,

Our outcomes are correlated with normal values

1. Elevation of carbohydrate level was observed.
2. Protein level was moderately increased.
3. Increased level lipid was seen.
4. Calcium level was significantly increased.
5. Elevation of phosphorous level were observed.

On the basis of our study, it may be concluded that green gram is good for health. The Vegetable stage of green gram is also in high nutrients especially rich in protein and phosphorous content. Green gram is also preferable for skin disease patients.

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