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Effect of Panchagavya on Sesamum Indicum

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Abstract: The Panchagavya is a combination of five products obtained from the cow which is used in traditional medicine and it has been experimented by various organic farmers.It has a significant role in providing Resistance to pests and disease and increasing the overall yield.The present research work was carried out to study the effect of panchagavya spray on growth,yield and Biochemical changes of Sesamum indicum. A field Experiment was conducted to find the variation in growth, Biochemical and yield parameters of Sesamum indicum Under different concentrations are control,1,3,5,7.5 and10% of panchagavya,and also at two stages of plant,where two stages are seedling and yielding stage and all the biochemical parameters were increased in 3% concentration Since there was an increasein growth and Yield at low concentration of panchagavya.It is proposed that,The panchagavya can be used for Sesamum indicum after diluted properly.
Keywords: Biochemical Parameter, Morphology Studies, Sesamum indicum, Panchagavya.

I. INTRODUCTION

Agriculture is considered to be one of the oldest occupations, perhaps as human civilization. About half of the world‟s population is engaged in agriculture, of which the developing countries of Asia contribute more than 70%. Indian agriculture contributes about 37% of the nations income, though about 70% of the population engaged in it and now farmers are moving towards organic farming. Where Panchagavuya plays a major role in organic farming . Panchagavya is an organic formulation, which in Sanskrit means the blend of five products obtained from cow milk, ghee, curd, dung and urine and all these above products are individually called as “Gavya” and collectively named as panchagavya.[15]

Panchagavya is also mentioned in vvkshayurevada texts and it has been experimented by farmers. It has a significant role in providing resistance to pests disease and increasing the overall yield. Heavy use of chemicals in agriculture has weakened the ecological base in addition to degradation of soil, water resources and quality of the food. At this juncture, a keen awareness has sprung on the adoption of "organic farming" as a remedy to cure the ills of modern chemical agriculture. It is very much essential to develop a strong working and a compatible package of nutrient management through organic resources for various crops based on scientific facts, local conditions and economic viability. In fact, eight percent of our agricultural land, which is currently under cultivation suffer from serious problems of soil health, mainly due to indiscriminate use of chemical fertilizers. Building of soil fertility is indispensable for higher productivity of the cultivated lands. Thus, organics play a vital role in soil fertility and crop productivity[3]. Now only 10% farmers moved to organic farming in India.. Excessive use of chemical fertilizers and pesticides deteriorates the soil quality by changing the physical, chemical and biological properties of soil. They adversely affect the microbial population present in the soil and due to that ecological balance is hampered. Now-a-days liquid organic manures are becoming popular to combat the adverse effect of chemical fertilizers. They can supply essential nutrients to the crop plant and also provide several growth promoters and bio-control agents to prevent disease and pest infestation. Liquid organic manures can be prepared by using severalfarm inputs and daily household materials. So the cost required to prepare these liquid organic manures are very less comparing with the chemical fertilizers and pesticides. In order to maintain sustainability in agriculture liquid organic manures should be adopted in a large extent. Panchagavya literally means “mixture of five cow products”. According to Hindu dharma, Panchagavya has high significance. It can be used as an Ayurvedic medicine and it has good potential as an organic fertilizer and pesticide Jeevumrutha is 5 one of the four pillars of the Zero Budget Natural Farming . As the name signifies, Jeevumrutha is highly cost effective for the farmers .

II. MATERIALS AND METHOD

A. Seed Collection and Plant Materials

The seeds of *Sesamum indicum* Were collected from the market at Kiliyanur ,Villupuram,Tamil Nadu. *Sesamum indicum* seeds were washed, shadow dried and subjected to pulverization to get a coarse powder .

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B. Preparation of Alcoholic 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.

C. *Design of the Experiment*

Experiment Period: December to February;
Experiment Design: Randomized Block Design;
Plot Size: 2 × 2 m;
Crop Studied: Sesamum indicum
Treatment: Control × Different Concentration of Panchagavya
Panchagavya Concentration: 1%, 3%, 5%, 7.5% & 10%.

D. Morphological Studies

The morphological studies were observed in *Sesamum indicum* , and plant height, fresh weight and dry weight were measured in various concentrations with various intervals during seedling, and yielding stages.

1) *Fresh Weight:* Fresh weight of the plants was measured with the help of an electronic digital balance and expressed in grams.
2) *Dry Weight:* The collected plant materials were kept in hot air oven at 55°C for 24 hours. Then, the dry weight of the plants was measured using an electronic digital balance and expressed in grams.
3) *Morphological Studies Yield parameters:* The yield parameter of *Sesamum indicum* sprayed with different concentrations of panchagavya is presented in Table 1. The highest yield parameters such as yield weight (2.93 g) of *Sesamum indicum* were recorded in the plants sprayed with 3% concentration of panchagavya when compared with control as well as other concentrations.

E. Biochemical Analysis

The biochemical contents are protein and Amino Acid were analyzed at various stages during seedling, and Yielding stage of Sesamum indicum .

1) Estimation Of Protein

Protein was estimated by the Lowry's method

a) *Preparation Of Reagents:* Reagent A: 0.4 g of sodium hydroxide was dissolved in 100 ml of distilled water. To this solution, 2 g of sodium carbonate was added.
Reagent B: One per cent of copper sulphate was mixed with equal volume of 2% sodium potassium tartarate.
Reagent C: Fifty milliliter of reagent A and one milliliter of reagent B were taken and mixed freshly at the time of experiment.
Folin - Phenol reagent: One milliliter of Folin - Phenol reagent was diluted with 2 ml of distilled water.
b) *Extraction:* Five hundred milligram of plant materials were weighed and macerated in a pestle and mortar with 10 ml of 20% trichloro acetic acid. The homogenate was centrifuged for 15 min at 600 g. The supernatant was discarded. To the pellet, 5 ml of 0.1 N NaOH was added and centrifuged for 5 min. The supernatant was saved and made upto 10 ml of 0.1 N NaOH. This extract was used for protein estimation.
c) *Estimation:*One milliliter of the extract was taken in a 10 ml test tube and 5 mL of reagent 'C was added. The solution was mixed and kept in darkness for 10 min. Later, 0.5 ml of Folin-Phenol reagent was added and the mixture was kept in dark for 30 min. The sample was read at 660 nm in a UV Spectrophotometer.

2) Estimation Of Amino Acids

Amino acids were estimated by the Ninhydrin Method.

a) *Ninhydrin Reagent:* Eight hundred gram of hydrated stannous chloride was dissolved in 500 mL of citrate buffer at pH 5.0 and 20 g of recrystallized Ninhydrin in 500 ml of methyl cellosolve. Then these two solutions were mixed.
b) *Extraction:* Five hundred milligram of plant materials were weighed and macerated with a pestle and mortar with 10 mL of 80% ethanol. The homogenate was centrifuged for 10 min at 800 g. The supernatant was saved. The extract was used for the estimation of amino acids.

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c) *Estimation:* One milliliter of the extract was pipetted out into a test tube. A drop of methyl red indicator was added. The sample was neutralized with 1 ml of 0.1 N sodium hydroxide. To this, 1 mL of Ninhydrin reagent was added and mixed thoroughly. The content of the test tube was heated for 20 min in a boiling water bath. Five milliliter of the diluent solution was added and heated in water bath for 10 min. The tubes were cooled under the running water and the contents were mixed thoroughly. Blank was prepared with 1 ml of distilled water or ethanol. The absorbance was read at 570 nm in a UV - Spectrophotometer.

III. RESULTS AND DISCUSSION

Table01: The morphological Yield parameters of Sesamum indicum

Concentration of panchgavya	Yield weight (g)
Control	0.996
1 %	1.85
3%	2.93
5%	1.67
7.5%	1.19
10%	0.67

Table 02: The morphological parameters of *Sesamum indicum* of Seedling stage grown under different concentration of panchagavya spray

Concentration of panchgavya	Seedling stage		
	Plant Height (cm/plant)	Fresh Weight (g/plant)	Dry Weight (g/plant)
Control	22.4	0.42	0.29
1%	27.7	0.93	0.65
3%	36.3	1.20	0.94
5%	25.1	0.78	0.48
7.5%	20.5	0.57	0.35
10%	16.9	0.31	0.19

Table 03: The morphological parameters of Sesamum indicum of Yielding stage grown under different concentration of panchagavya spray

Concentration of panchgavya	Yielding stage		
	Plant Height (cm/plant)	Fresh Weight (mg/plant)	Fresh Weight (mg/plant)
Control	56.6	0.95	0.74
1%	69.2	1.32	0.98
3%	79.6	1.8	1.27
5%	77.2	0.98	0.78
7.5%	71.3	0.67	0.49
10%	71.1	0.55	0.35

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Table 04: Biochemical contents of *Sesamum indicum* grown under different concentration of panchagavya spray

Concentration of panchgavya	Seedling stage		Yielding stage	
	Protein (mg/plant)	Amino Acid (mg/plant)	Protein (mg/plant)	Amino Acid (mg/plant)
Control	0.254	0.328	0.249	0.368
1%	0.293	0.335	0.283	0.390
3%	0.318	0.414	0.317	0.419
5%	0.278	0.396	0.281	0.389
7.5%	0.243	0.319	0.234	0.293
10%	0.219	0.315	0.208	0.273

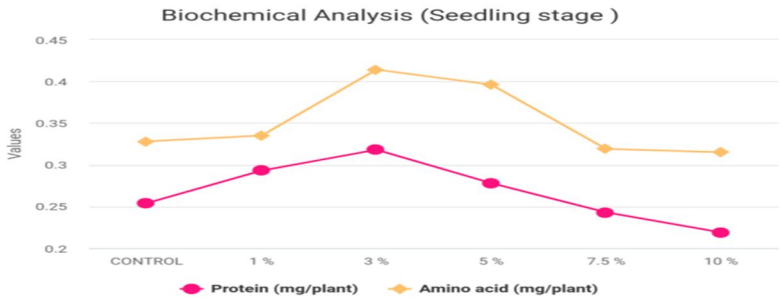


Figure 01: Biochemical analysis Graphical method of seedling stage

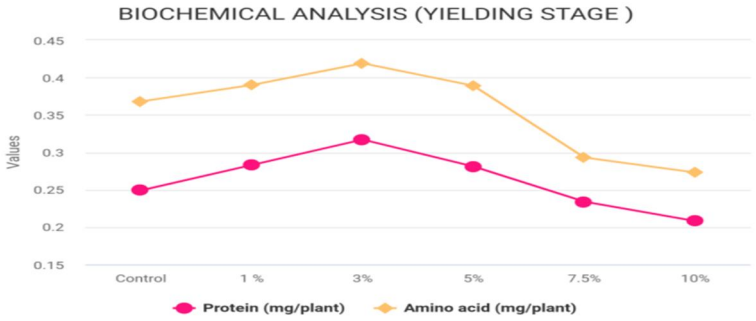


Figure 02: Biochemical analysis Graphical method of yielding stage

Field experiment was conducted to know the changes in morphological, biochemical and yield parameters of Sesamum indicum due to panchagavya spray. The morphological parameters of Sesamum indicum at various stages of seedlings and yielding are shown in Table 1, 2 and 3 and Where biochemical parameters of Sesamum indicum at various stages of seedlings and yielding are shown in Table 4 Many advanced countries mainly depend upon the dairy byproducts because of their commercial, agricultural and medicinal activities play a vital role in the development of the countries. When a new house or building or even a temple constructed in India, the first to enter premises would be the cow because this is considered to be auspicious. In recent years the people have recognized a number of commercial, medicinal and agricultural values from the various products of dairy forms. have carried out extensive works in this aspects and the environmental management in developing countries. The number of new methods of recycling and controlling measures of organic waste in urban and rural habits. The present study revealed the morphological growth, biochemical and yield parameters of Sesamum indicum grown under the different concentrations of (control, 1, 3, 5, 7.5 and 10%) of panchagavya spray.

The morphological parameters such as plant height, number of leaves, fresh weight and dry weight of Sesamum indicum were increased in 3% panchagavya spray when compared with control and other Concentrations .

IV. SUMMARY AND CONCLUSION

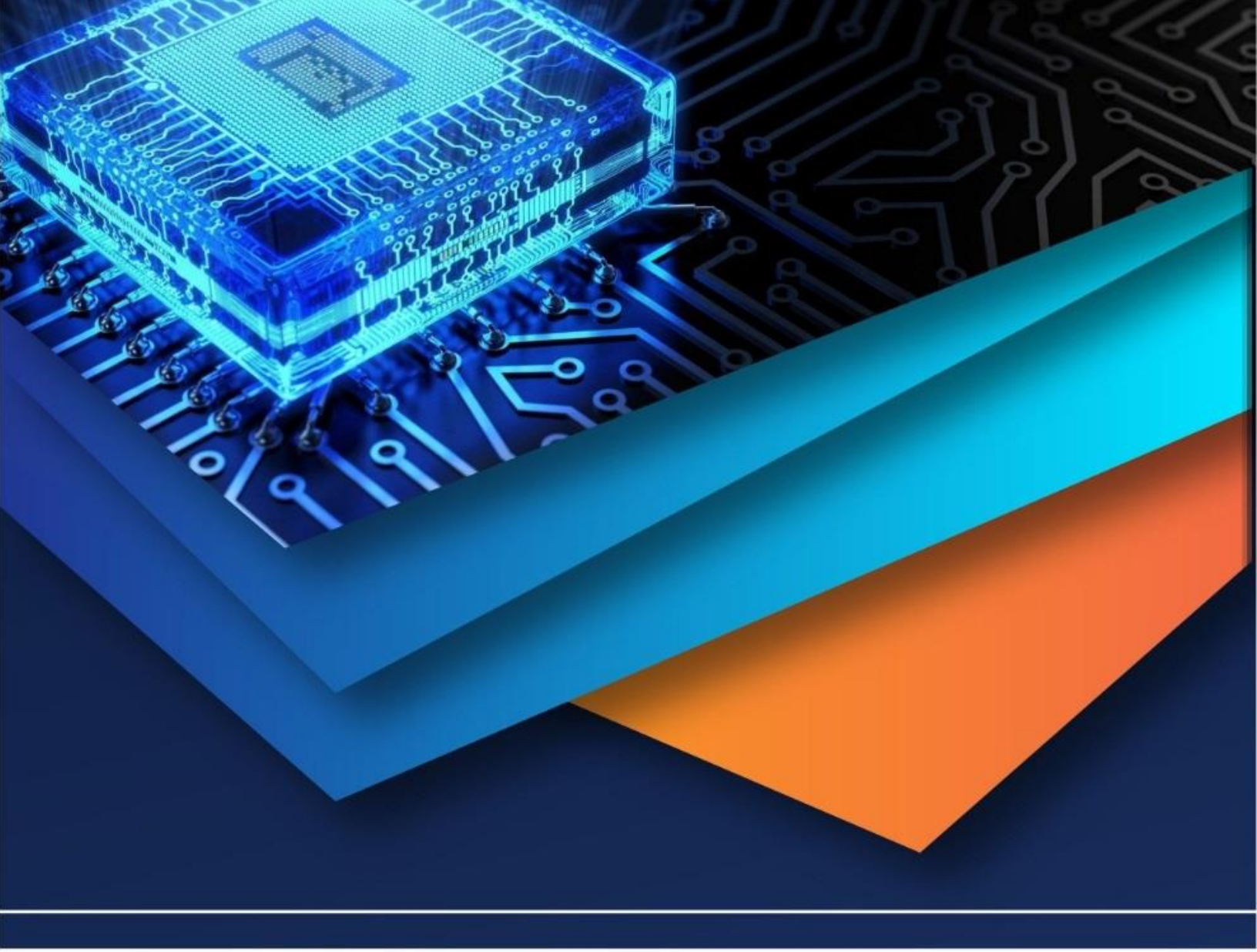
Herbs are widely exploited in the traditional medicine and their curative potentials are well documented. Large scale evaluation of the local flora exploited in traditional medicine for various biological activities is a necessary first step in the isolation and characterization of the active principle and further leading to drug development. The present research work was carried out to study the effect of panchagavya spray on growth, yield and biochemical changes of *Sesamum indicum.* All parameters were increased in 3% concentration. Since there was increase in growth and yield at low concentration of panchagavya, it is recommended that the panchagavya can be used for spray after diluted properly. Ghee provides vitamins A and B, calcium and fat. These contents stimulate the growth and yield of all vegetable crops. The present study was constructed to assess the biochemical changes in panchagavya with Neem to Macrotyloma. The consequence of the reflects are bridged as follows, The screening of alcoholic extract in presence of carbohydrate, steroids, Tannins, protein, phenol, Amino acids and the absence of Alkaloids, Glycosides, Flavonoids and saponins. Cow's urine provides nitrogen which is essential for crop growth. Milk provides protein, fat, carbohydrates, amino acid and calcium. Curd provides lactobacillus which act as a catalyst in the digestion of organic waste.The present research work was carried out to study the effect of panchagavya spray on growth, yield and biochemical changes of *Sesamum indicum* . All parameters were increased in 3% concentration. Since there was increase in Biochemical and growth at low concentration of panchagavya, it is recommended that the panchagavya can be used for spray after diluted properly.

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