

Assessment of Physico-chemical and Bacteriological analysis of Waste Decomposer enhance with fruits bioenzyme for dumping yard site at Harda (M.P)

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Abstract :

The "Organo-magical solution" was prepared with the help of fruits bio enzyme by enhancing the power of waste decomposer to properly decompose the main organic waste in municipal solid waste at dumping yard site of Harda city.

The formation method of Waste Decomposer is very easy, in which an eco friendly "Organo magical solution" is prepared by adding fruits bio enzyme. The fermentation process by the rotten fruits used in this "Organo magical solution" happens very fast in which the bacterial species rapidly break down the complex compounds into simple and eco friendly materials. Physico-chemical analysis has reported secondary metabolites in the form of phytochemicals which accelerate the biodegradation process by supporting the growth of important bacteria of the waste decomposer such as *Bacillus* and *Pseudomonas* Species. Bio manure will be produced by decomposing the organic waste. Along with this, soil health will improve and green house gases like methane, which are major sources of environmental air pollution, can be controlled.

Keywords: Organo-magical Solution, Waste Decomposer, Fruits bio enzyme, Bacteriological, Organic waste, phytochemicals, Biodegradation.

Introduction: Harda city is well known district of Madhya Pradesh with a geographic Position is between 210 53' & 220 36' Longitude and between 760 47' & 770 20' Latitude.

In Harda city, solid waste is collected door to door by the municipal community, whose organic waste includes rotten fruits, vegetables, cow dung, plant and animal residues etc. These are collected at the dumping yard site. Due to lack of proper treatment, the environment is affected.

Waste Decomposer it is a group of few beneficial microorganisms which is isolated by Dr. Krishan Chandra 2004 from desi cow dung at National Centre for Organic Farming, Ghaziabad under the Department of Agriculture, Cooperation and Farmers Welfare. Fruits bio enzyme is a natural enzymes which is produced by fermentation process, which is make with the use of rotten fruits such as apple, pineapple, banana, sapodilla etc.

"Organo- Magical" Solution made with the combination of Waste Decomposer and Fruits Bio Enzymes is very effective for organic waste. In which the bacterial population of waste Decomposer converts complex materials into simple compounds by biodegradation, while bio enzymes enhance the bacterial community and works as cleaning agents.

Materials and methods : Waste Decomposer formation

Mix 2 kg jaggery in 200 lit. of water and stir well and Pour the Waste Decomposer culture and stir well everyday. Cover the container with a cardboard. The waste Decomposer gets ready after 5 to 7 days.

Fruits bio enzyme formation

Take an air tight container (20 lit.) Add 1 part of jiggery (1 kg.) 3 part of fruits peels, whole fruit (Apple, banana, pineapple, sapodilla etc.) 3 kg. and 10 part of water and mix well (10 lit.) After a week, stir it once in 2-3 days After 3 months (90 days), the fruits bio enzyme gets ready now filter it with the help of cotton cloth or sieve.

Organo- magical Solution formation

Take Waste Decomposer solution 5 lit. Mix with fruits bio enzyme 5 lit. The "Organo-Magical Solution" gets ready for organic waste treatment at dumping yard site.

Physico-chemical analysis

The "Organo-magical" solution was collected in sterile glass bottle for testing physico-chemical properties such as pH, colour, Total dissolved solids, odour, Temperature etc. All the physico-chemical parameters were analysed by standard laboratory instruments like digital pH Meter, TDS meter and thermometer also. Specially the biochemical test for secondary metabolites Such as Alkaloids, Flavonoids, Quinones, Tannins, Cardenolides and saponins were analyzed by standard biochemical test in chemistry laboratory.

Bacteriological analysis

Bacteriological analysis is designed to indicate the degree of decomposition of organic waste. The bacterial population in "Organo-magical" solution were estimated by serial dilution and pour plate method on different culture media such as Nutrient agar, King's B media, Tryptic soy agar, YEMA, EMB, Mac Conkey agar etc. using 0.1 ml of sample. All culture media petri plates were incubated at 37°C for 24-48 hour's and final counts of colonies were noted.



Result and Discussion

Table 1(A) : Result of physico-chemical analysis of "Organo-magical" solution.

S. No.	Parameters	Finding
1	PH	5-6
2	Color	Yellowish
3	TDS(ppm)	187
4	Odor	Unpleasant
5	Temperature	24.6°C

Table 1(B): Biochemical test for secondary metabolites of Organo- magical Solution

S. No.	Phytochemicals	Finding
1	Alkaloids	+++
2	Flavonoids	+
3	Quinones	++++
4	Saponins	-
5	Tannins	+++
6	Cardenolides	+

++++ Very strong presence
 ++ Slightly less presence
 -Absent

+++ Strong presence
 + Very less presence

Table 2 : Bacteriological analysis**No. Of bacterial colonies shown in different dilutions**

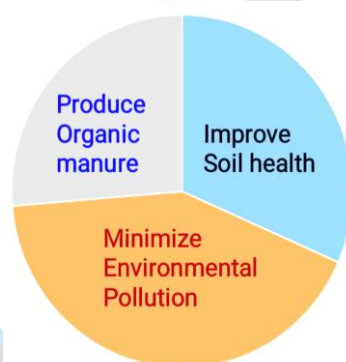
S. No.	Bacterial species	Dilution 10 ⁻¹	Dilution 10 ⁻²	Dilution 10 ⁻³	Dilution 10 ⁻⁴	Dilution 10 ⁻⁵	Mean
1	Bacillus firmus	71	61	55	33	21	48.2
2	Pseudomonas putida	69	51	41	32	15	41.6
3	Rhizobium spp.	31	27	21	18	11	21.6
4	Azotobacter spp.	51	41	32	25	12	32.2
5	Streptococcus faecalis	42	31	25	15	07	24
6	E-Coli	37	25	14	11	05	18.4

Researchers prepared "organo- magical" solution by mixing waste decomposer and fruits bio enzymes. The physico-chemical and bacteriological profile is shown in the table. Prominent bacterial species discovered in "Organo magical" Solution include Bacillus and Pseudomonas spp. is known for its ability to degrade various complex organic compounds, including hydrocarbons, aromatic compounds, pesticides into simpler, more environmentally friendly substances, as well as phytochemicals found in bio enzymes by providing carbon source, nitrogen source to the bacterial population and enhancing the metabolic process by generating reactive oxygen, which is enhance their growth and cause degradation at the dumping yard site and formed Organic manure also, which is very beneficial for Environment and soil health also.

Conclusion :

Mixing bio enzymes and waste decomposers formed "Organo- magical" solution at a dumping site will potentially accelerate the decomposition process of organic waste. The phytochemicals in the bio enzyme solution would break down complex organic molecules into simpler compounds, while the waste decomposer would contain microorganisms that further degrade organic matter. Together, they could enhance the degradation of organic waste, reducing the volume of waste and minimizing environmental pollution.

This new innovative solution created by using fruits bio enzymes to enhance the potential of waste decomposer will benefit Environmental protection and soil health.



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