



**GOVERNMENT DEGREE COLLEGE
LUXETTIPET**

**JIGNASA STUDENT STUDY PROJECT 2022-23
A PROJECT ON WATER PURIFYING PLANTS**



DEPARTMENT OF BOTANY

CERTIFICATE OF PARTICIPATION

This is to certify that B.Sc Life sciences Students of Government Degree College, Luxettipet has carried out a "Project On Water Purifying Plants"

Name of the Supervisor: P. Savitha, Lecturer in Botany

Name of the students who participated in the project

1. G. Navya, BSc Crop Production III Yr
2. T. Prassanna, BSc Crop Production III Yr
3. B. Anjali, BSc Crop Production III Yr
4. M. Ganga Bhavani, BSc BZC III Yr
5. T. Priyanka, BSc BZC III Yr

Sd/-
PRINCIPAL

J.K. J.L.
Principal
Govt. Degree College
Luxettipet-504 215, Dist. Warangal

DECLARATION

We students of GDC Luxettipet participated in Jignasa student study project in Botany Subject and our topic of project is "A project on Water purifying plants". We also hereby declare that we have carried on the project on our own and It is not copied from anywhere. We have carried out this project under the supervision of Smt. P. Savitha, Lecturer In Botany.

- 1. G. Navya, BSc Crop Production III Yr**
- 2. T. Prassanna, BSc Crop Production III Yr**
- 3. B. Anjali, BSc Crop Production III Yr**
- 4. M. Ganga Bhavani, BSc BZC III Yr**
- 5. T. Priyanka, BSc BZC III Yr**

A PROJECT ON WATER PURIFYING PLANTS

STATEMENT OF THE PROBLEM

Currently Water pollution is the one of the major issues to be tackled immediately, because most of the flora and fauna need healthy water for their growth, and also the world economy is dependent on healthy life. As Nature has wonders and solutions to many problems, Identifying different plants and their parts used for purification of water and encouraging the application of the same may reduce the problem to some extent.

AIMS AND OBJECTIVES

To bring awareness on water purifying plants and encouraging for applying their properties on a large scale for water purification.

HYPOTHESIS

As nature itself has solutions for various problems, various plants have water purifying capacity which can be used for reducing the pollution of water and may be the safest and cheapest method.

RESEARCH METHODOLOGY

Data Collection

Primary source

Enquiring and gathering information from old people who has the touch of traditional methods. Collected the plant parts and water from various water bodies, carried on the experiments with equipment like TDS meter, pH meter etc.

Secondary source

Gathered information from various articles and ayurvedic books.

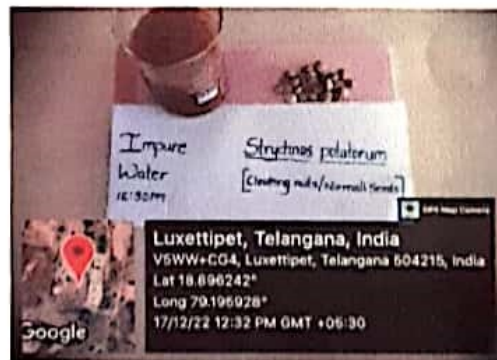


Gathering traditional information from old people in village



collecting water from Godavari for finding Ph & TDS

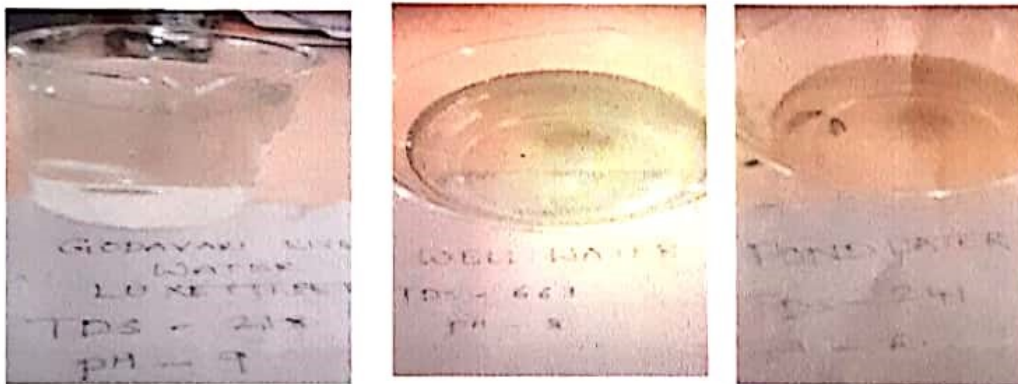
STRYCHNOS POTATORUM SEEDS USED FOR PURIFYING THE WATER



FINDING OUT TDS OF WELL WATER, POND WATER AND GODAVARI WATER



FINDING OUT Ph OF WELL WATER, GODAVARI WATER AND POND WATER



FINDINGS

We have found many coli form bacteria, algal forms, protozoan members, heavy metals, over salinity and hardness etc in our collected water and to our knowledge Water overflowing from agriculture, industries and sewage water has the remnants of chemical fertilizers like nitrogen, phosphates, heavy metals, human waste, household waste, leakage of oils from oil spills into the water sources, Nuclear waste etc. Consuming this water will cause diseases to humans, animals and plants and also use of this water in production of different industrial goods may degrade the quality of the products. Hence finding natural solutions to reduce the pollution content in the water is the best method, where one practice is growing and using the plants and their properties for purification of water.

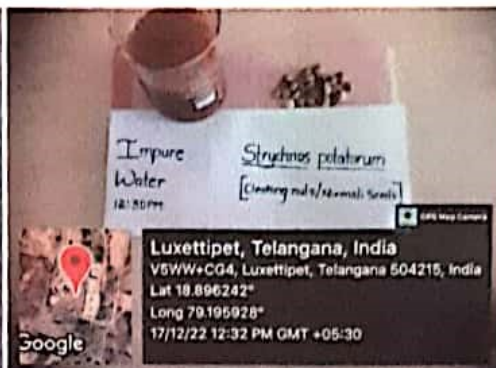
To our wonder we have come to know about many plants having water purifying capacity. Some examples are

1. Strychnos potatorum (Nirmali)

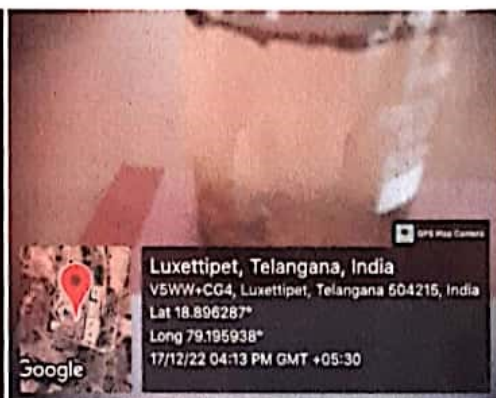
Plant part used: Seed

Property: important for its coagulating property used for purifying impure water

Through our experiment we found that within 2hrs muddy water turned pure when seeds were put in muddy and impure water. By gathering information from some articles it was found that when impure water was treated with the powder of stychnos potatorum the growth of *Proteus vulgaris*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Escherichia coli* were significantly inhibited. This property is attributed due to the presence of polyelectrolytes, proteins, lipids, carbohydrates and alkaloids containing the -COOH and free -OH surface groups in the seed.



Strychnos potatorum seeds



Experiments with the seeds of strychnos potatorum in lab

2. *Moringa oleifera* (Drum stick)

Plant part used: Seed

The seeds kernels contain water soluble proteins and when the powdered seed is added to water, they attract clay, silt and bacteria and toxic contents in the water. According to some studies seeds of drumstick has polyelectrolytes which are useful in coagulating, flocculent and reduces the turbidity of ground water. It reduces the alkalinity, salinity and turbidity of drinking water and also has antimicrobial activity where drinking water treated with moringa seeds has fewer bacteria.



3. *Nelumbo nucifera* (Lotus)

Part used: Lotus plant wholly

Nelumbo nucifera introduced in wells, ponds and in biowastes to cleanse all impurities in water and to remove bad odor. According to some studies *Nelumbo nucifera* shows high potential for usage in wastewater treatment removing polluting compounds and heavy metals. It is able to grow in variable water conditions and in low light intensity. Various studies show the successful use of *N. nucifera* to counteract water eutrophication. The leaves of the floating lotus reduce sunlight reaching the lower part of the water. This suppresses algae growth in *N. nucifera* aquatic systems and thus, the oxygen content is up to 20% higher than in other aquatic plant systems. Due to intense agricultural practices, nitrogen and phosphorus pollution are major problems in aquatic systems. *N. nucifera* is able to assimilate a higher content of phosphorus than aquatic plants currently used for water remediation.



4. *Emblica officinalis* (Amla)

Part used: Wood and fruit of emblica

Woods of emblica are capable of reducing the hardness of water and the amount of magnesium and sulphate in drinking water. In siddha and unani also emblica officinalis is used as a water purifier. It's an age old process. It also found that fruit extract has antibacterial property.



5. *Aegle marmelos* (Indian Bael)

Part used: Leaf

Leaves have insecticidal property and used in the purification of water



6. *Musa paradisiacal* (Banana)

Part Used: Peel of Banana fruit

Banana peels can be used to purify drinking water contaminated with toxic heavy metals such as copper and lead, according to a study. Banana peels can be used to filter water. Banana peels contain sulfur, nitrogen, carboxylic acid and other atoms that function pretty much the same way magnets do in terms of attracting heavy metals. These molecules do not affect human health. Researchers found that minced banana peel could quickly remove lead and copper from river water as well as, or better than, many other materials. A purification apparatus made of banana peels can be used up to 11 times without losing its metal-binding properties, they note. The team adds that banana peels are very attractive as water purifiers because of their low cost and because they don't have to be chemically modified in order to work.



7. Ocimum sanctum (Tulsi)

Tulsi leaves are thought to reduce the content of fluorine in drinking water. A laboratory based study depicts that fluoride depicts that the plant has an efficiency of removing 68.4% of fluoride from the water. Tulsi Leaf extract have great potential as anti microbial agent for the treatment of water. The treatment is simple, cost-effective, eco friendly, reachable for all and the components present in Ocimum sanctum has no side effects.



S. No	Common Name	Scientific Name	Plant Part Used For Purification	Purification property
1	Clearing Nut	Strychnos potatorum	Seeds	Purifies impure water
2	Drum Stick	Moringa Oleifera	Seeds	Attracts clay, silt and Bacteria from water
3	Lotus	Nelumbo nucifera	Plant	Clean the impurities in water and remove bad odor
4	GooseBerry	Emblica officinalis	Branches and wood	Reduce the hardness of water
5	Indian Bael	Aegle marmelos	Leaves	Purifies the water as it as insecticidal property
6	Banana	Musa paradisiaca	Peel of the fruit	Removes heavy metals
7	Tulsi	Ocimum Sanctum	Leaves	Reduces the fluorine content of the water

CONCLUSION

80% of diseases and 50% of child deaths worldwide are related to poor water quality. When released into the environment untreated, destroys natural resources, causes serious health problems, and damages our economies. If this pollution trend continues, millions will die.

As our country have different climatic zones with different geographical structure with abundant medicinal plants growing in different areas. Many plants have water purifying

GOVERNMENT DEGREE COLLEGE, LUXETTIPET
JIGNASA PROJECT WORK 2022-23
STATE LEVEL PRESENTATION
DEPARTMENT OF BOTANY



T.K. Jilani

Principal
Govt. Degree College
Luxettipet-504 215, Dist. Medak