

Reuse of RO Waste Water With Natural Ingredients

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Abstract- Solapur, India have hardwater due that reasons people can't use directly these water as it might be not good for their health and peoples affect problems like skin infection, skin dryness etc. In this city we faces a lot water problems due to the climate of excessive heat in Solapur the underground water level is very low. Particularly during summer months water comes after 7 days the reason of underground water level decreases, even during raining season people face water problems the rain is not that sufficient so that it can bring the underground to level.

This study Investigates the potential for reusing REVERSE OSMOSIS(RO) waste water and decreases its hardness and PH level of the RO waste water using natural ingredients like fenugreek seeds, cinnamon, cadmium and magnet. We will keep these ingredients in water for at least 5 days and check their PH level and hardness of the water and after observing of the water as slightly change in their PH level and hardness of water we can use this water for plants and agriculture purpose.

A Significant source of water waste, for Irrigation and animal husbandry in the Region. We have tried to reuse the water.

Keywords- Reverse osmosis (RO), reuse of wastewater, chemistry lab, hardness, PH level, fenugreek seeds, cinnamon, cadmium and magnet

I. INTRODUCTION

This study explores the potential of utilizing natural and readily available materials such as fenugreek seeds, cinnamon, cadmium and a magnetic field to enhance the quality of Reverse Osmosis(RO) water. This research also investigates the hard water of Solapur district, India. In these research we come to know the underground water of Solapur in which the hardness and the PH level of water is most. The human-beings including plants can't use this water directly reason, these water may be harmful of us as the hardness and PH level of these water is most. As Solapur faces a lot of problems of water during every season. Solapur climate is

excessive heat due to this reason the underground level of water is less, and during summer the underground water level decreases a lot. Due to these people faces problems of shortage of water and there is not efficient water for their daily use and although for drinking purpose. Even the rainfall variability is non-uniform across the district. For example, Karmala and Malshiras tahsils have the least irregular rainfall, while Akkalkot tahsil receives a good rainfall as compared to these both districts.

The average rainfall from 2000-2019 was 500.64mm, while the average from 2010-2019 was 464.28mm. This indicates a decreasing trend in rainfall over the last 10 years. As for this water we the human beings can't use for the drinking purpose, so in most of the houses the people use reverse osmosis(RO) water for drinking purpose.

The synergistic effects of these natural agents in improving PH level and hardness of the RO water. It will outline the proposed experimental design and the rationale for selecting fenugreek seeds, cinnamon, cadmium and magnetic field for water reuse.

II. EASE OF USES

A. Beneficial uses

- Irrigation: watering of droughts-resistant crops, Landscape irrigation.
- Animal husbandry: Livestock watering, cleaning of animal pens.

B. Environment and Socioeconomic Impact

Assessment of the environment and socioeconomic Benefits of RO wastewater reuse such as:

- Water conservation: Reduced reliance on Freshwater resources
- Agricultural productivity enhancement: Improved crop yields.

- Economic benefits: Reduced water purchase Costs for households and industries.

III. PAPER WORK

This study aims to provide valuable insights into the feasibility, sustainability, and potential benefits of RO wastewater reuse in Solapur(India), contributing to more efficient water management practices and mitigating the impact of water scarcity in the region.

IV. METHODOLOGY

A. Procedure:

This study investigates that how we can reuse of the RO wastewater using natural ingredients (Fengugreek seeds, cardamom, cinnamon and mangent) in remediating Reverse Osmosis(RO) wastewater.

	PH level	TDS	Hardness
RO wastewater	6.74	980	336mg/L

Table 4.1

Three beakers containing RO wastewater were treated with:

1. Fengugreek seeds.
2. Cinnamon and magnet.
3. Cardamom.

of RO waste water. This study explores the potential of utilizing natural and readilyavailable.After 5 days treatment period, the PH level, hardness and TDS of the treated water were measured to acceses the effectiveness of each tratment method. The results of this study aim to provide insights into the feasibility of using these low-cost and readily available ingredients for improving the quality materials such as fenugreek seeds, cinnamon,cardmium and a magnetic field to enhance the quality of

Reverse Osmosis(RO) water.

⇒ Properities of natural ingredients.

Fengugreek seeds: fibre, iron, magnesium.

Cinnamon:Magnesium, calcium, iron and vitamin A

Cardamom:Phosphorus, Sulfur v,iatmic C



Fig.4.1 Sample of RO water with fengugreek seeds, cardmom, cinnamon and magnet

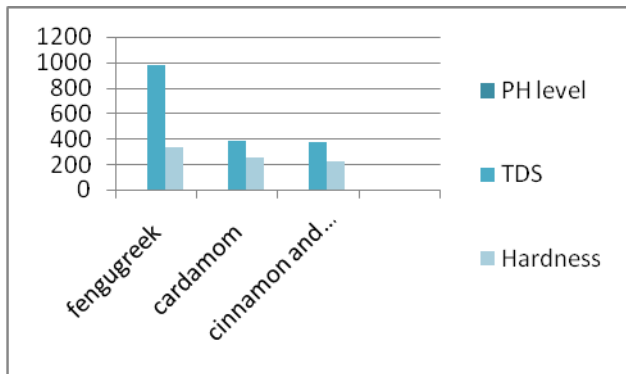
After 5 days we check again the RO water with ingredients. And we found that the hardness of water with indgredients is less as compared before

	PH level	TDS	Hardness
Fengugreek water	6.90	980	336 mg/L
Cardamom water	6.80	385	256 mg/L
Cinnamon and magnet water	6.98	369	230 mg/L

Table 4.2



Fig.4.2 Hardness of RO water after 5 day



Graph 4.1



Fig 4.3 Sample of cinnamon, cardamom and magnet

B. Observation:

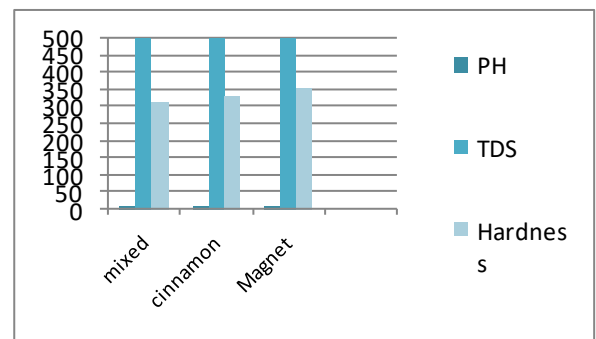
The table 4.1 and table 4.2 indicates that after five days of keeping various natural ingredients and magnet in reverse osmosis(RO) wastewater, a noticeable decrease in PH level was observed in cardamom ,cinnamon and magnet water.This reduction in PH suggests that the water may have become slightly less acidic, likely due to the breakdown organic materials or the interaction of certain ingredients with the water.The lower PH can have significant implications for its suitability in different uses. Such a water could potentially be reused for irrigation, offering a sustainable solution to water recycling.(However,before considering it for animal consumptions, futher analysis on the persence of harmful pathogens or chemical would be necessary to ensure its safety.)

Plants typically tolerate a range of PH levels, with many preferring of acidic conditions, making this water potentially beneficial for agriculture purpose. These specific impact of the modified water on both plants heath and animal use.

After observing the decreases in PH level and hardness in cardamom, cinnamon and magnet we mixed both the ingredients in RO waste water and in other two container we add cinnamon and magnet. After the 5 days treatment we again observe PH level and hardness of the water.

	PH level	TDS	Hardness
Cardamom, cinnamon and magnet (mixed)	6.55	805	310mg/L
Cinnamon	6.62	635	330mg/L
Magnet	7.30	635	356mg/L

Table 4.3



Graph 4.12

C. Conclusion:

This research demonstrates the potential of utilizing natural ingredients such as fenugreek seeds,cinnamon, cardamom and magnet to improve the quality of Reverse osmosis(RO) waste water, with the particular focus on addressing the water issues in Solapur, India. The study highlights the water scarcity faced by Solapur city due to the harsh climate and low underground water levels, which have a hardwater and high PH levels and its is not directly consume

for agricultural purpose and also for living beings. By using these natural agents to RO waste water, the research explores the possibility of reducing its hardness and PH level and making it more suitable for agriculture purpose.

This result of this experiment indicates that these natural ingredients, when left in the water for a period of 5 days, have a noticeable improvement in the hardness and PH level of the RO waste water. Furthermore, the reuse of these water for the irrigation purpose.

Overall, this study undergoes the importance of exploring eco-friendly and cost-effective methods to reuse the RO waste water, and potential benefits of natural ingredients in improving water quality for both human and environment needs. Further research and development in the area could lead to more efficient.

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