



To Enhance the Efficiency of Okra seeds Extract by using Common Salt

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ABSTRACT

The present study is carried out to enhance the efficiency of okra seeds extract as a coagulant by using common salt for the water treatment of Narmada River water, this has been determined by collecting the samples from Tilwara Ghat in Jabalpur, Madhya Pradesh, at the time of Chhat puja it have a turbidity 14.3 NTU in main stream of the Narmada River. During the extract preparation very little quantity of common salt is added with the dry seeds of Okra. Turbidity analysis by using jar test

Key Words: common salt, jar test, Extraction of seeds of Okra, PH, TDS, Chloride, Fluoride.

Introduction

The water is important substance for human beings and to run life of the plants but now a days the availability of drinking water has become scant due to water pollution. This polluted water will have to go through treatment process before the supply to the people. One of the treatment, coagulation occurs when a coagulant is added to water to "destabilize" colloidal suspension. "coagulation is one of the cheapest processes for treatment of various organic effluents"

The use of Okra seeds extract as a coagulant may result in a more sustainable and economically viable alternative by enhancing the efficiency of this extract. Naturally occurring coagulants are usually presumed safe for human health. The *Moringa stenopetala* and Okra seeds extract have been found to be available replacement coagulant for chemicals such as aluminium Sulphate (alum).

Okra seeds extract as a natural coagulant become more efficient when a little quantity of common salt is added. Okra is generally occurs in tropical, subtropical, and warm temperate regions around the world (National Research Council, 2006). So by adding common salt to the okra seeds extract the efficiency is increased.

Materials and method

Preparation of extract

Okra which having hard fibbers and not eatable are brought from local market that is Satpula market Jabalpur, near Jabalpur engineering collage, Jabalpur, Madhya Pradesh, India. Select the defected Okra pods and separate them by putting into dustbin, wash remaining Okra pods which are unaffected by any germs wash with the fresh water now take a stainless steel knife and separate the outer fibber carefully take out the seeds dry them 9am to 5pm in sun light. Now take the 1gm of these dry seeds soaked in the 1000ml of distilled water, 1 gm of common salt and stands for 24 hours then by using pipette now we can take desired ml of this extract solution and the jar test is carried out for the desired results.

Water sample

Water sample for the testing were collected from Narmada River at Tilwara Ghats at atmospheric pressure and atmospheric temperature different samples are collected from different locations during Chhat Puja and their raw water characteristics were recorded in laboratory.

Preparation of coagulants

Take 1gm of dry seeds of Okra and 1gm of common salt using weight machine. Now take 1000ml of distilled water by using measuring cylinder and mix them manually now stands for 24 hours. After this filter this solution by using laboratory filter paper now the obtained extract solution is ready for use



Figure-1: Okra seeds solution with common salt in JEC Jabalpur M.P.

Before treating the water samples, their initial parameter was check, especially PH, Turbidity, Total hardness, fluorides contain, Total dissolved solid(TDS), conductivity with the conductivity meter, Turbidity by Turbidity meter .Jar test is used to determine the coagulant property of Okra seeds extract. In this experiments six jar of capacity 1000ml fill with the water sample and take 1 ml, 2ml, 3ml, 4ml, 5ml, 6ml and 7ml, 8ml, 9ml, 10ml, 11ml, 12ml, of extract solution is added in first to six jar respectively and subjected to jar mixing 80rpm for 1 minute ,slow mixing at 30 rpm for 15 minutes. After this switched off, the stirrer and allowed the flocks to settle without disturbing the jars for 30 minutes. The samples for residual turbidity measurement were drawn using a pipette from a height of 5 cm below the surface of each beaker, and the residual turbidity was measured for each sample of beaker. The effect of dose of Okra seeds extracts on removal of turbidity is also studies we assume that the excellent floc formation takes optimum dose as 6ml/1000ml.



Figure-2: Jar test apparatus in collage laboratory, JEC Jabalpur M.P.

Results and discussions

Results

Table 1: Raw water sample parameters

Sr. No.	Parameters	Characteristics of water sample before coagulation
1	Turbidity(NTU)	14.3
2	p ^H	7.50
3	Alkalinity(mg/l)	80
4	Hardness(mg/l)	160
5	Fluoride(mg/l)	0.28
6	Total dissolved solids(mg/l)	112
7	Iron(mg/l)	0.09
8	Chloride(mg/l)	30
9	Conductivity(ppm)	625.7

Table 2: Parameters of treated water sample with Extract of okra seeds only

Sr. No.	Parameters	Characteristics of water sample after coagulation
1	Turbidity(NTU)	5.9
2	p ^H	8.25
3	Alkalinity (mg/l)	100
4	Hardness (mg/l)	120
5	Fluoride(mg/l)	0.28
6	Total dissolved solids(mg/l)	125
7	Iron(mg/l)	0.09
8	Chloride(mg/l)	30
9	Conductivity(ppm)	237

Table 3: parameters of treated water sample with Extract of okra seeds and common salt

Sr. No.	Parameters	Characteristics of water sample after coagulation
1	Turbidity(NTU)	4.8
2	p ^H	8.15
3	Alkalinity (mg/l)	80
4	Hardness (mg/l)	120
5	Fluoride(mg/l)	0.28
6	Total dissolved solids(mg/l)	125
7	Iron(mg/l)	0.09
8	Chloride(mg/l)	30
9	Conductivity(ppm)	221

Discussion

The increase in water demand for different activities and increase in water pollution the quantity of portable water is decreasing rapidly the major population of Madhya Pradesh as well as India is facing with a water scarcity problem. The treatments plants are very expensive, ability to pay for services is minimal and kills as well as technology are scant. Therefore local available materials can be utilised towards achieving sustainable safe water supply. The study was conducted to increase the efficiency Okra dry seeds extract by using common salt for the water treatment.

A study was made for different extract solutions prepared from Okra seeds and common salt. It was obtained that the maximum 58.74% for 6mg/l as an optimum dose from previous study. Now we use the same dose for this study by using 1 gm of common salt to 1000ml of Okra seeds Extract and stand for 24hours.

Conclusion

The increase in the growth rate of population of India as well as Madhya Pradesh, rapidly increasing in water pollution, urbanisation, industrialisation, living standard of people and population the demand of domestic water is also increasing. Many cities are facing the portable water scarcity in many countries like India. It is expensive to start a new treatment plant in required proportion. Therefore the locally available organic like Okra seeds can be utilised toward achieving sustainable safe water supply to all the people. In this research paper the study was conducted to enhance the efficiency of Okra seeds Extract by using common salt as a new alternative of the natural coagulant and its optimum dose in water treatment. It was thus obtain that the maximum removal efficiency of turbidity is 58.74% by using optimum dose of Okra seeds Extract solution of 6ml/1000ml of raw water with the initial turbidity of raw water is 14.3 NTU becomes 5.9 NTU after treatment with the Okra seeds Extract. But in case of the Okra seeds Extract with the common salt the efficiency of turbidity removal is 66.43%.

Hence the okra seeds Extract efficiency is increased from 58.74% to 66.43%. So the net increase is by 7.69% by using 1 gm of common salt in 1000ml of Okra seeds Extract.

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