Ph.D thesis evaluation report Title of the thesis comparative studies on textile dye water treatment by phytoremediation adsorbent (dried root powder \_ eichhornia crassipes) and bioremediation ( Psedomonas vesicularis )reused for aquaculture and agriculture.

Name of the candidate Ms. Revathy

Subject of the thesis Zoology Degree PhD in zoology

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This paper deals with two low-cost, locally available, renewable biosorbents; apple pomace and wheat straw for textile dye removal.

In this study, we have assessed the potential of Trametes hirsuta and a laccase from this organism to continuously degrade textile dyes. We examined for the first time the reuse of enzymatically decolorized dyeing liquors for dyeing and the toxicity of the degradation products.

The Candidate has carried out extensive and systematic search of the available literature dealing with === The candidate has understood well the information available in the literature related to the present study.

1. PREVIEWS

In recent years several phytoremediation process have also been adopted by many researchers for removing color and heavy metal from industrial effluent A very promising area for removing color from textile is biological treatment that breaks down the dye molecules to basic elements . Biosorption is yet another mode of removing pollutants from waste waters employing either living or dead biomass

Further this synthetic dyes has carcinogenic " cytotoxic and genotoxic effects and moreover it has reported that working in textile industries entails exposures that possibly dysfunction of kidney , liver, brain ,reproductive system and even central nervous system. Hence, there is a need to treat the textile dye waste water before it is discharged into the any water bodies.

The present project carried out by the candidate Ms. S. Revathy has also attempted employing three different modes [integrated] for removing color and pollutant s in textile dye waste waters and these treated waste waters further used in Aquaculture and this fish cultured waters reused in Agriculture processes. So, the candidate has framed the objective of the present study in such a way to identify the most effective mechanism through which the textile dye effluent can be treated.

2 HIGHLIGHTS

In this present investigation, the candidate used three different mode of treatments for effective removal of color and some of the heavy metal compounds from textile dye waste water .The work was carried up to 45 days at the interval of 15 days,. Overall from the results, the color removal efficiency was highest by dried root powder [Eichhornia plant] followed by alive plant and biomass [P.vesicularis].

Regarding the metal reduction from the textile dye effluent by three treatments was also well established byE .crassipes especially heavy metals like Coppe, Zinc and Cadmium and Nickel and Lead by P,vesicularis.

The main highlight is that the treated textile dye water was used as a source for fish culture and the used fish culture water was reused for the cultivation of Sorghum bicolor.

The treated textile dye waste water has good resource ,because ,the treated waste water showed 100% survival of the fish population and studied biochemical parameters were more or less equal to control water [tap water] culture. Similarly , the treated textile dye water s fish culture were also reused for agriculture to check the germination, growth and some biochemical parameters of Sorghum bicolor also showed improvement nearly to control water and also exhibited soil Organic carbon content ,improved the nutrient levels compared to untreated textile dye waste waters. The candidate as a whole has concluded that the alive plant E. crassipes was an efficient removal of pollutants in treating the industrial waste water when many factors are concerned such as color reduction, absorption of chemical constituent and detoxification nature of the plant. The candidate also added that this mechanism of treating textile dye effluent would be cost-effective and eco- friendly in treating contaminated industrial waste water

3 COMMENTS

The candidate has undertaken much effort to each and every step of the study for realizing the objectives of her research work. Standard methods were followed for all the experiments and the results were well presented appropriately in the form of tables and figures and were used relevant statistical application for confirmation of the comparative results. The findings of the results have been discussed more appropriately with relevant and recent literatures. In the text, then and there some typographical error has been noticed .It has been avoid these mistake while publishing the work in journals,

The candidate may restricted the work ,because it was too much of parameters, but the purpose of this research work has been split out clearly and carried out side by side in better way.

As a whole, the thesis reveals various mode of bio-remediation for reduction in the color and toxic compounds in the textile waste water. The treated textile dye effluent further re-use strategies in the field of Aquaculture and Agriculture.

4. RECOMMEDATION

The topic selected and methods applied are quite appropriate. The findings of the present work have higher implication in bio-remediation measures.

The candidate Ms,S.Revathy has chosen out a good work revalent to the present existing environment al problems which will advance the existing knowledge on this work especially in Indian context. I noticed some typographical mistakes in the thesis, they should not affect the results, presentation, discussion and the quality of the thesis work .The thesis presentation is lucid scientific and revalent to the objectives of the study.

Hence, I congratulate the candidate and the research guide for carried this good integrated work. Therefore, I highly commended thesis and recommend that the viva- voce be conducted and the candidate be awarded Ph.D Degree by Periyar University, Tamilnadu, ,India.