

Activated sludge process for the treatment of sugar industry effluent

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The effluent, which is coming out from the sugar industry, is not fit for irrigation purposes or other usages. Untreated effluent cause severe pollution problems on land, plants, rivers and aqua creatures. The effects are extended to human beings through his feed containing the polluted food plants and animals. There are various origins of the sugar effluent like Mill house waste, Boiler house waste, Waste along with floor washings and Filter cloth wastes. This wastewater having severe pollution loads should be treated properly until they are free from pollutants. There are various methods available for the treatment of sugar effluent. Among them activated sludge process has a high pollutant removal efficiency and is suitable for normal atmospheric conditions. In this work an attempt was made to find out reason for frequent disturbance of microorganisms, which is present in the aerator tank and the various characteristics of wastewater like P^H , Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD), Mixed Liquid Suspended Solids (MLSS), Sludge Volume Index (SVI), F/M ratio were determined before and after the treatment and reported. The various microbes present in the sludge were also identified and it was found that nearly 84.39 kg/day of urea and 60.38 kg/day of Diammonium Phosphate (DAP) were required to treat 800 m³ of effluent from the sugar industry using the activated sludge process.

Biography

Sujitha has completed his B. Tech-Biotechnology at St. Michael College of Engineering & Technology, Kalayarkoil and doing her M. Tech-Biotechnology in the same Institution. Prior to her M. Tech as well as now, she is working as Assistant Professor in the department of Biotechnology. She is also an active researcher doing many research works under the guidance of Dr. K. Jegatheesan. She has published a paper in a reputed national journal. She has also organized and attended various National level Symposiums, Seminars and workshops.

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Antimycotic activity of polyphenols against *Candida albicans* biofilm

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The increase in *Candida albicans* biofilm infections in last decades has paralleled with the increased use of a broad range of medically implanted devices in patients with impaired host defences. These biofilm- implant associated infections are inherently difficult to resolve and may require both long-term antifungal therapy and the physical removal of the implant to control the infection. The aim of this investigation was to identify active compounds which could negate the necessity of the biofilm formation on these implanted devices. In recent years, the interest in polyphenols from plant extracts has been rejuvenated for their anti-inflammatory, anti-oxidant and antimicrobial property has come into renown. The minimum inhibitory concentration (MIC) assayed by the CLSI M27-A3 broth micro-dilution method showed antifungal activity at a concentration of 1.2 mg mL⁻¹ for quercetin and curcumin, 8.0 mg mL⁻¹ for gallic acid on *C. albicans* MTCC 227 with ketoconazole as positive control. The effect of polyphenols on metabolic activity of preformed *C. albicans* biofilm cells was established using 2,3-bis(2-methoxy-4-nitro-5-sulfophenyl)-2H-tetrazolium-5-carboxanilide (XTT)/Menadione in 96-well polystyrene micro plate. Curcumin (10 mg mL⁻¹) and gallic acid (10 mg mL⁻¹) inhibition was recorded to be >75%, whereas quercetin (2.5 mg mL⁻¹) resulted in >90% inhibition against *C. albicans* biofilm. Further microscopic visualization of polyphenolic treated *C. albicans* biofilm under scanning electron microscopy (SEM) showed radical reduction in the dense network of yeast, hyphae and pseudohyphae forms. These broad-based initiatives would be helpful to combat the *C. albicans* biofilm formation and supplement the current therapies related to biofilm infections.

Biography

Suma C. Pemmaraju is currently pursuing her PhD in Department of Biotechnology from Indian Institute of Technology Roorkee, India under the joint supervision of Dr. Vikas Pruthi and Dr. R Prasad. She is working in the field of Molecular Microbiology (Fungal Biofilms). She is a University top rank holder and awarded with the INSPIRE Fellowship, funded by Department of Science and Technology. She has two publications in referred journals and three international conferences.

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