Research Article

Screen the efficient growth of *E.coli* to removal Congo red dye by some modified media

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ABSTRACT

The aim of this study was Screen the economical growth of E. coli that have the flexibility to removal artificial dyes Congo dye on some modified media. The current study is concentrated on the screening, isolation of effective bacteria microorganisms for the decolorization of textile effluent and analysis of the performance of the method additionally optimisation of parameters for increased decolorization. The isolation was administered by serial dilution methodology, The samples for microorganism isolation were collected from water bodies environments , and therefore the decolorization was administered within the batch reactor. The effective microorganism isolated from the textile was E. coli , the power isolate , usually isolate No . (5) has been characterised by biochemical analyses and EPI twenty system, the simplest media for growth of E.coli that have ability to get rid of the Congo dye was N.B. The decolorization method exploitation E.coli for Congo dye yields high efficient decolorization. the method was easy, efficient and eco-friendly. The parameters like nutrients, time had the larger potential for the effective growth of microorganisms were optimized and might be applied to the various textile treatment applications.

Keywords: Congo dye removal, E.coli, modified media

INTRODUCTION

Chemical group dyes are the foremost and useful category of dyes . Benzene, toluene, hydrocarbon, phenol and phenyl amine produces these dyes (1). These artificial dyes are health risks on humans that performance as cyanogenetic, mutagenic, cancer and lethal in various examination organizations (bladder cancer, splenic sarcomas, hepato - carcinomas and nuclear anomalies in experimental animals and to body aberrations). They're capable to impact on fetuses by inflicting cerebral and skeletal abnormalities (2).Textile dye are painted chemicals of complicated aromatic structures and have ability to resist the impact of some factor as, detergents, sunshine and temperatures (3they are chemically and photo chemically stable and persist in natural atmospheres, within the world-wide annual unleash of artificial textile coloring material has been appraises to be over 1 x 106ton (4). Several microorganism exploitation in dye degrading, raj etal reportable four species of microorganism enterobacter cloacae, hafnia alvei, enteric bacteria (klebsielapneumoniae), serratiamarcescens collected from farming soil in degrading the congo dye (1). Geobacter-like species proverbial to come up with electricity were acknowledge within the presence or absence of azo dye compare with, azospirillum, methylobacterium, rhodobacter, trichococcus, and bacteroides species were only distinguished in its presence. these species were presumably in command of degrading azo dye (7). the aim of this study exploitation microorganism (e.coli) isolates have ability to to remove of the azo dye(congo red) from the environmental materials and methods dyes this dye a secondary cation (iupac term metallic element three,3′-([1,1′-biphenyl]-4,4′-diyl)bis(4-aminonaphthalene-1-sulfonate). it was ready by adding 0.1 g of azo dye in 1000 cm^3 of water. Hydrogen ion concentration was adjusted at seven. Microorganisms e. coli isolates were isolated from the native water source (the isolation was administered by serial dilution method), and diagnosed by morphological and biochemical and confirmed test api 20 system in line with (8) .The experiment condition was the temperature 37 °,ph 7, shaking condition 150 rpm. inoculant of every microorganism isolates was ready by sub culturing .The hydrogen ion concentration was adjusted to seven, and therefore the culture was incubated at 37oc for twenty-four hours. Some changed culture media so as to screen the efficient growth of e.coli to removal azo dye. The important media include (nutrient broth, water with addition carbon supply and atomic number 7 supply ,tap water with out addition, stream with addition carbon supply and atomic number 7 supply, stream with out addition). Decolorization assay: was measured decolorization exploitation uv-spectrophotometer. the flasks were incubated within the dark at 37c for ninety six h

below shaker condition. each twenty four h every 24 h an aliquot of 4 ml was removed from the tube. And therefore the absorbance values of suspensions were measured exploitation uv-vis photometer (agilent-cary three hundred, singapore) at 595 nm.

Results and discussion

Throughout this gift study used some modified culture media so as to screen the efficient growth of E.coli to removal Congo red . The important media include (nutrient broth , water with addition carbon supply and nitrogen supply ,tap water without addition , stream with addition carbon supply and atomic number nitrogen supply, stream without addition). Notably five Environmental isolate of E.coli that sight rely on the biochemical and API twenty system that capable to removal Congo dye. additionally the water quality sight by chemical and physical test (pH, temperature , EC,TDS) table NO.(1).. This study show several factors that impact on the flexibility of E.coli to grow within the media contain Congo dye and ability to get rid of this dye by E.coli . the value of growth for this microorganism measured by O.D. .The first issue painted by time was recorded through ninety six h.. The second issue painted the economical media ,N.B. show high economical growth .The third factors painted the power isolate , usually isolate No . (5) was recorded on the all this media , The issue of your time was appraise at seventy two h. figure No (1,2,3,4,5).The result proved within the figure NO. (6) that show the simplest media for growth of E.coli that have ability to get rid of the Congo dye was N.B. ,Tap water with addition , then water while not and stream water with addition , whereas stream with out addition recorded less value , for the expansion of E.coli. For the effectiveness of microorganism decolorization ,must be ability and activity of every being are the foremost important features that influence on so , therefore on progress a smart bioprocess for the dye waste matter treatment, it's ought to be uninterruptedly investigate microorganisms that capable to degrade chemical group dyes, that improved by varied analysis works has been confirmed the potential of microorganisms like Rhizobiumradiobacter (9),Penicilliumochrochloron(10), artificial dyes ar in the main degraded by super molecule action (11) and additionally the enzymes Azoreductase, laccase and polymer oxidase enzyme are reportable to attack the aromatic alkane series construction of the dyes (12; 13). The decolorization of dyestuff dye was in the main thanks to the stimulation of catalyst super molecule that includes the subtractive cleavage of chemical group bonds (–N=N–). trade represents construction of corresponding amines (intermediate metabolites) leading to color removal of building block dyes (11).The supreme degree of color removal of Rb 5(51%) unbroken on attractive among forty eight hours ,while no decolorization occurred to seventy 2 hours (13). However, most decolorization of RB60 and Rb5 (57%) by *Lactobacillus*delbrueckii have slightly increasing in color removal throughout forty eight hours untill seventy 2 hours of incubation to a lower place a similar conditions. Sandra (14) had declared that, the length of interaction time will influenced the bioactivity capability and it are usually differ in accordance with properties of the dye and additionally the action of the microorganisms [12].To improvement the expansion of microorganism , that will retain to the have some enzymes was facilitate to extend growth of microorganism reportable like Laccases ,that need the carbon and nitrogen supply increased the growth, Gomaa (15) established that aldohexose was the foremost active carbon supply for supreme decolorization potency of *Pseudomonas sp.*, for black B and Congo red dye. However, the best Congo red dye decolorizationratios by *Bacillus Cereus* and *Bacilluslicheniformis*up to72 and 80.32%, severally were noted within the found of starch. Another nitrogen sources" pepton compound and yeast extract" were the simplest catalyst for decolorization of dye" black B and congo red". Guo,et al (16) reportable the simplest medium for the fast decolorizationis yeast extract .the yeast extract painted one compound of medium of N.B. Wang et al. (17) reportable that aldohexose play necessary role in decolorization of Reactive Red dye (90%) by Citrobacter sp. wherever as in absence of aldohexose solely twenty six.72% decolorization was found.

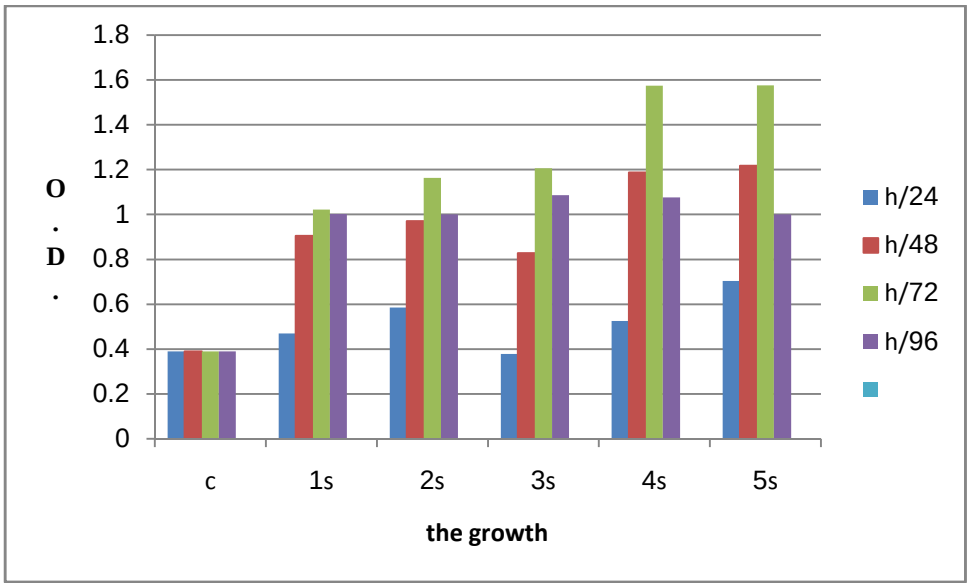

figure (1) The growth of *E.coli* on nutrient broth.

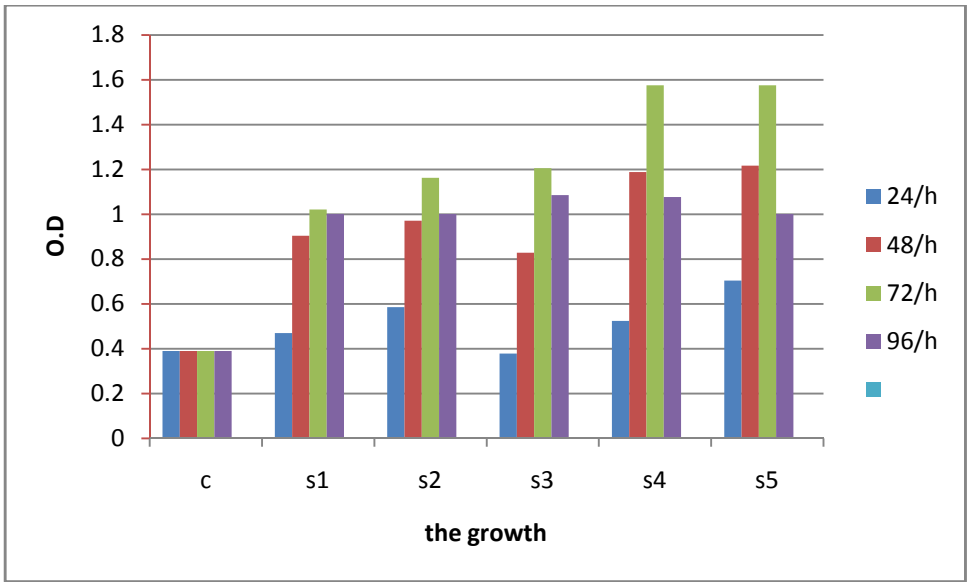

figure (2) the growth of *E.coli* on Tap water with addition carbon and nitrogen source

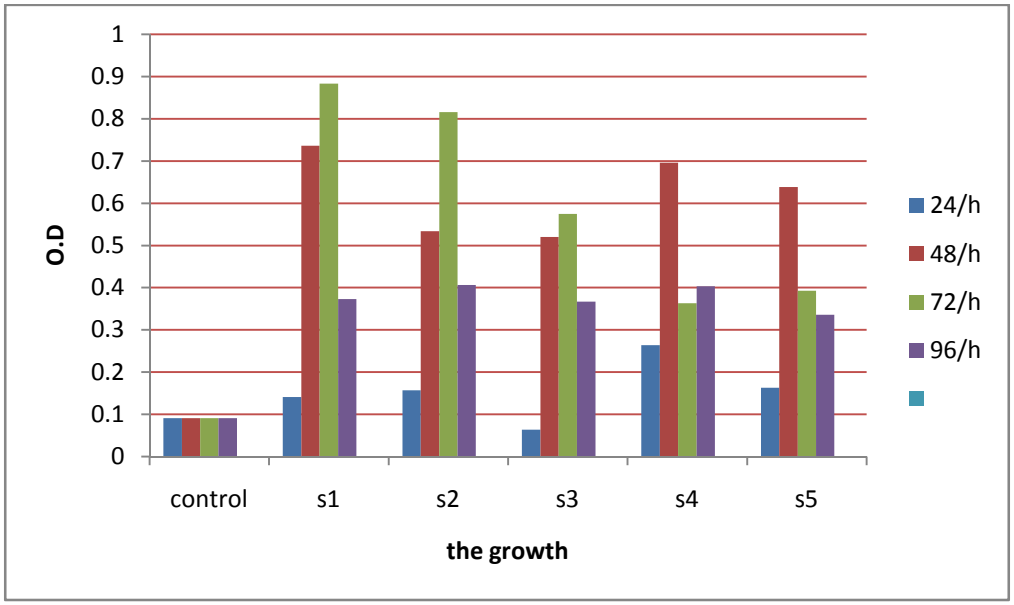

figure (3) the growth of *E.coli* on stream media with addition carbon and nitrogen source

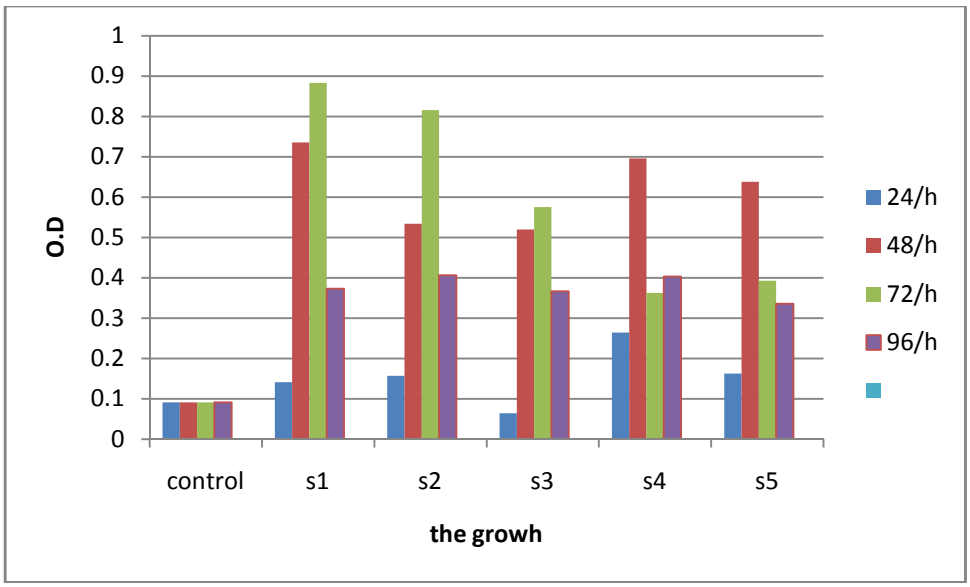

figure (4) the growth of *E.coli* on stream media without addition carbon and nitrogen source

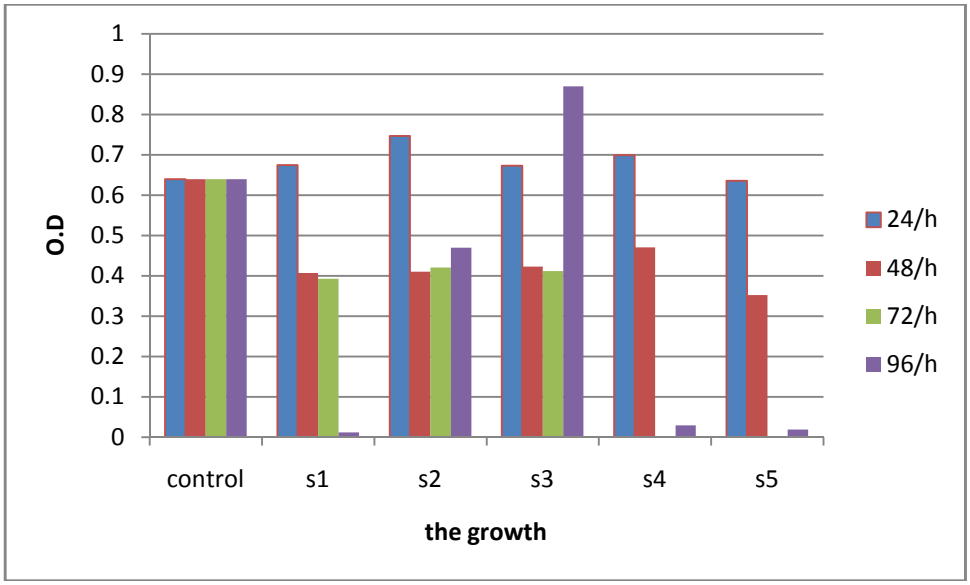

figure (5) the growth of *E.coli* on tap water media without addition carbon and nitrogen source.

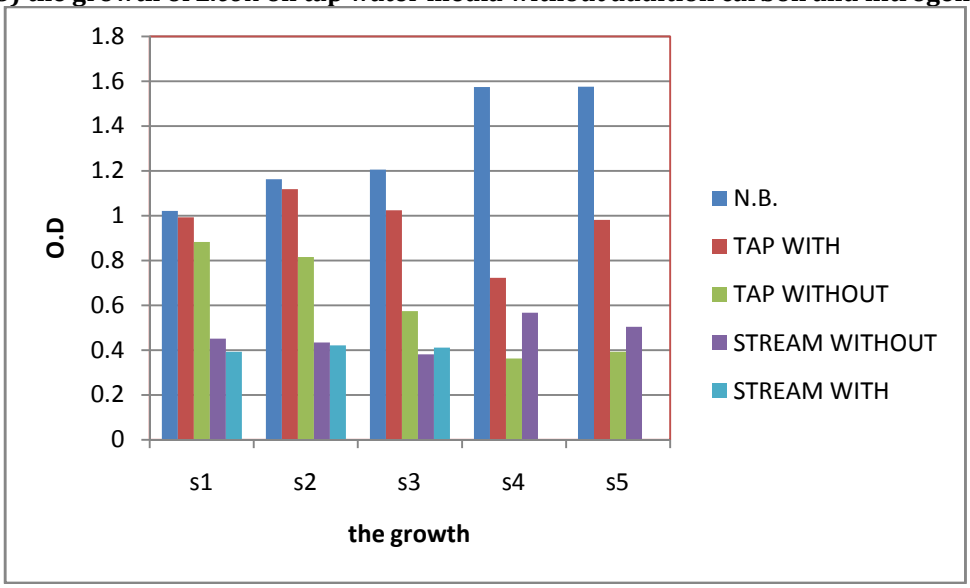

figure (6) compae the growth of *E.coli* on different media

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