BIODEGRADATION OF AZO DYE UNDER ANAEROBIC CONDITIONS BY STRAINS ENTEROPATHOGENIC *E. coli*

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Introduction. Environmental pollution has been recognized asone of the major problems of the modern world. One of the most important environmental pollution problems is the color in water courses (1). The textile industry is one of the greatest generators of liquid effluent pollutants, due to the high quantities of water used in the dyeing processes (2). Azo dyes make up approximately 70% of all dyestuffs used worldwide by weight making them the largest group of synthetic colorants and the most common synthetic dyes released into the environment (3,4). In the natural environment, azo dye can be transformed or degraded by a variety of microorganisms, including aerobic and anaerobic bacteria.(5) The present study thus utilized bacterial decolorizing of an azo dye under anaerobic conditions used wild strain *Escherichia coli* wastewater isolated and pathogenic strains.

Methods. The dye degradation study in wild strains enteropathogenic *E. coli* obtained from Alseseca river, *Pseudomona aeruginosa*, E2348/69 and DH5α. All strains were cultivated at 37°C with Luria Bertani (LB) and inoculated into nutrient broth (1 g/l beef extract, 2 g/l yeast extract, and 5 g/l NaCl) medium. For degradation of azo dye were carried out in nutrient broth amended with 100, 200 and 300 ppm direct Black 22, inoculated with 10% of bacterial culture, incubated at 37°C under static conditions for 10 days. The degree of decolorization of the dye was determined spectrophotometrically (λ=480) after being centrifuged at 6000 rpm for 10 min. Color removal efficiencies were calculated: $CR(\%)=D_i-D_f/D_i*100$.

Results. In all the concentrations tested was carried out decolorization. The color removal was 54.1% higher in the 100 and 300 ppm concentrations, whereas at 200 ppm gave approximately 67.9% (Table 1).
Concerning the percentage of strains removal at 200ppm there is difference between wild strains enteropathogenic *E. coli* with DH5α and *Pseudomona aeruginosa*. In Figure 1 shows a decrease of the dye from the first day of incubation, to remain constant in the 6th with all strain tested.

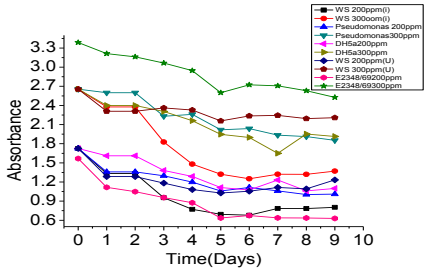

Fig.1. Decolorization Direct Black 22 with wild strain enteropathogenic *E. coli* (WS), Pseudomona, DH5α E2348/69 (E) throughout 10 days of batch incubation period.

Table 1. Color removal efficiencies of strain enteropathogenic *E. coli* (WS), Pseudomona, DH5α E2348/69 (E

Strain	Initial concentration (ppm)	Final Concentration (ppm)	Initial absorbance.	Final absorbance.	Color removal efficiencies (%)
WS(I)	200	80.51	1.725	0.8025	59.74
WS(i)	300	137.45	2.655	1.37$	54.18
WS(u)	200	123.75	1.725	1.2335	38.15
WS(u)	300	221.52	2.655	2.208	26.16
Pseudomona	200	101.43	1.725	1.011&	49.28
Pseudomona	300	185.86	2.655	1.8525$	38.04
DH5α	200	110.26	1.725	1.099*	44.86
DH5α	300	192.08	2.655	1.9145$	35.97
E2348/69	200	64.11	1.568	0.639&*	67.94
E2348/69	300	253.43	3.386	2.526	15.52

Conclusions.
The wild strain enteropathogenic *Escherichia coli* was able color removal to 59.74% of initial concentration.

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