Decolorization of Acid Orange 12 dye by *Yarrowia lypolitica* NBRC 1658 Strain

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**Objectives:** Azo dyes are used in paper, food, leather, pharmaceutical and cosmetic industries, as well. Due to high amount of water use in dyeing process, textile industry is one of the most important sources of pollutants in liquid form. Disposal of untreated effluents into the environment leads to many adverse effects since colored water bodies create aesthetic problems, dyes and their breakdown products cause toxic effects and affect photosynthetic activity of aquatic systems by reducing light penetration. The aim of this study is to demonstrate decolorization ability of *Yarrowia lypolitica* yeast and the effects of various parameters (such as initial pH, glucose concentration, nitrogen concentration and initial dye concentration) on decolorization of Acid Orange 12.

**Materials and Methods:** *Yarrowia lipolytica* NBRC 1658 strain was obtained from Hacettepe University’s Department of Food Engineering. Acid Orange 12 was obtained from Sigma- Aldrich ®. The decolorization of Acid Orange 12 was determined spectrophotometrically at 416 nm wave length. The percentage of decolorization was calculated following equation.

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\text{Decolorization} \% = \left[ \frac{(OD_i - OD_f)}{OD_i} \right] \times 100
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Laccase activity was determined spectrophotometrically at 420 nm by oxidation of ABTS. Manganese peroxidase activity was assayed using the method which was described by Kuwahara et al. (1984).

**Results:** *Yarrowia lypolitica* NBRC 1658 could decolorize Acid Orange 12 effectively through biodegradation rather than adsorption. Neither laccase nor manganese peroxidase (MnP) activities were determined in culture mediums. *Yarrowia lypolitica* NBRC 1658 was able to decolorize Acid Orange 12 dye up to 95% within 24 hours in optimized conditions.

**Keywords:** Decolorization, Azo dyes, Acid Orange 12, *Yarrowia lypolitica*,