

## Screening of Factors Affecting Phenol Removal by *Ganoderma* Sp. Using Fractional Factorial Experimental Design

Rogaieh Delroba Kordlar\*<sup>1</sup>; Mehran Mohammadian Fazli<sup>2</sup>; Ali Assadi<sup>2</sup>; Gholamali Jafari<sup>3</sup>

*1-Department of Microbiology, Faculty of Medical and Basic Sciences, Zanzan Branch, Islamic Azad University, Zanzan, Iran*

*2- Department of Environmental Health, Faculty of Paramedics, Zanzan University of Medical Sciences, Zanzan, Iran*

*3-Department of Microbiology, Faculty of Paramedics, Zanzan University of Medical Sciences, Zanzan, Iran*

Assadi57@yahoo.com

**Background & Objectives:** Phenol is one of the important contaminating materials that has high toxicity level receiving in water resources. The contamination of bodies of water with phenol is a serious problem in terms of environmental considerations due to its high toxicity. Biodegradation is the best and economic Methods for refinement of phenol contaminated sites. Thus, present work was conducted in order to study of *Ganoderma* sp. Phenol removal efficiency for removal phenol in aqueous solution.

**Methods:** In present work Screening and identifying important factors on phenol removal, two fractional factorial design was used. Independent variables were included type of carbon source, carbon source concentration, type of nitrogen source, nitrogen source concentration, initial concentration of phenol, temperature, pH and shaking speed.

**Results:** Screening procedure suggested that the optimization of phenol removal process focused on glycerol concentration around 15g/l as carbon source, temperature around 25 °C, pH around 6, urea concentration around 2g/l as nitrogen source, initial Phenol concentration around 50 mg/l and shaking speed 150 rpm.

**Conclusion:** General results shown that present *Ganoderma* sp. fungi can be considered to be potentially useful in phenol removal. This study showed that statistical experimental design approach is a useful tool to improvement of phenol removal efficiency.

**Keywords:** Phenol; White-rot Fungi; *Ganoderma* Sp.; Fractional Factorial Design