



RESEARCH ARTICLE

Influence of Pyocyanin in Murine Lung Tissue

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ARTICLE INFO	ABSTRACT
Received: Feb 22, 2024	<p>The main objective of the present study was to find out the histopathological effects of pyocyanin pigment at a concentration of 500 µg/ml on lung tissue in male laboratory mice, by extracting and characterizing pyocyanin pigment from <i>P. aeruginosa</i> isolated from environmental samples, and it was injected intraperitoneal male laboratory mice. The Humason method was followed in the preparation of histological sections of lung tissue, and the results of microscopic examination showed the presence of some histopathological changes that increase in virocity with the length of time of the experiment. The results indicate that the cells that suffered necrosis have shown several changes such as the occurrence of pyknosis, enlargement of alveoli cells) hyperplasia (and even necrosis. As well as infiltration of inflammatory cells and the occurrence of congestion and severe bleeding in the lung tissue.</p>
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INTRODUCTION

Some Bacteria produce pigments that exhibit a number of functions including UV protection, oxidative stress, extreme temperature, and dehydration, and the pigments act as shields that protect bacterial cells from some natural antibacterial compounds produced by other microorganisms (Darshan and Manonmani, 2015; Sajjad, 2020), with regard to the industrial field, there is a trend towards natural dyes because they are safer for human use than synthetic dyes, and more biodegradable, despite the diversity of natural dyes, microbial dyes are preferred because of the ease and speed of their extraction, and the safety of those bacterial pigments such as melanin, pyoferridin, In addition, the potential medical use of bacterial pigments is strongly associated with their antioxidant, antibacterial, cytotoxic and anti-cancer activities (Numan et al, 2018). Pyocyanin belongs to the family of phenazine with a blue color, active in oxidation and reduction and is one of the secondary metabolites secreted by *Pseudomonas aeruginosa* (*P. aeruginosa*) (Shouman et al, 2023), its molecular formula C₁₃H₁₀N₂O and its molecular weight is low 210.23 Da (Watson et al. 1986), pyocyanin has the ability to penetrate cell membranes easily and cause the generation of reactive oxygen species, which leads to cellular cycle reduction and a number of cellular changes (Patel et al, 2016). The process of producing pyocyanin is affected by several external factors including temperature, pH, carbon and nitrogen source (Gahlout et al, 2021; Gonçalves and Vasconcelos, 2021).

MATERIAL AND METHODS

Extraction of Pyocyanin

The pyocyanin pigment was extracted from the *P. aeruginosa* isolated from water and soil samples for the districts of Qurna and AL-Medina in Basrah Governorate, by the following steps mentioned by