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Teratogenicity of Pyocyanin Pigment Isolated from Local Pseudomonas aeruginosa Isolates on Mice Neural Tube Defects (NTDs) and other Abnormalities

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ABSTRACT

The primary objectives were to examine the association between pyocyanin pigment and neural tube defects and other different malformations in mice embryos. In mice, NTD may result from genetic mutations or from exposure to teratogenic agents, several of which are identified as risk factors in humans.

Pyocyanin is a blue-greenish pigment was extracted from local *Pseudomonas aeruginosa* which is an extracellular virulence factor that is widely accepted to interpret the pathogenicity of *Pseudomonas aeruginosa*. To achieve this, Swiss white mice exposed to pyocyanin pigment, mice were 30 females and males, average age (8-14) weeks, and average weighted (27 ±2) g for females and (30 ±2) gm. for males. Pyocyanin was given intraperitoneally in the concentrations of 75 µg/kg of live body weight for group I, 125 µg/kg of live body weight group II and 200 µg/kg of live body weight for group III, whereas the control received only distilled water all those doses were given on

day 8th of pregnancy. The results have failed to demonstrate any association between pyocyanin and neural tube defects ($\chi^2= 5.32, d.f= 3, P\leq 0.14$). Whereas, It is evident that the pyocyanin has a real effect on mice embryos which it caused hypoxia ($\chi^2= 12.45, d.f. = 3, P\leq 0.006$). Also, the results showed that the relationship between pyocyanin and resorption was highly significant ($\chi^2= 10.45, d.f=3, P\leq 0.01$). The influence of pigment was highly significant ($P\leq 0.01$) on body weight, body length, and tail length. These significant findings of a low percentage of NTDs and other malformations, with a high percentage of hypoxia and resorption, are excellent evidence that pyocyanin pigment has a strong property of toxicity.

Keywords: Neural tube defects, Pyocyanin, Hypoxia, Resorption.