



Estimation of the Modulatory Roles of Thieno [2,3-c] Pyrazole Compounds Versus the Toxicity of 4- Nonylphenol in African Catfish (*Clarias gariepinus*)

Alaa El-Din H. Sayed^{1*} and Nasser Sayed Abou Khalil²

Abstract:

The endocrine disrupting substances represent major challenge to aquaculture and the most widespread one is 4-nonylphenol (4-NP). Pyrazole possess an interesting broad spectrum of pharmacological actions. Therefore, this study was designed to investigate the therapeutic potential of five novel thieno [2,3-c] pyrazole compounds in African catfish (*Clarias gariepinus*) on the hematotoxic and electrolyte disruptor influences of 4-NP. The hemato-electrolyte disturbance induced by 4-NP was well proved by many examined endpoints. On the other hand, thienopyrazole compounds exhibited the ability to modulate the previous toxicological impact by different levels based on the modification in structures and properties. This study provided insight into the endless therapeutic treasures of newly synthesized complexes, and a driving force for its application on the other clinically relevant problems in fish.

Keywords:

4-nonylphenol; *Clarias gariepinus*; blood; electrolyte; pyrazole.

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