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DNA Binding Activity of Some New Oximes as Anticancer and Antimicrobial Agents

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Extended Abstract

Oximes and *O*-substituted oximes are important compounds in organic and medicinal chemistry due to their practical applications in several drugs, biologically active compounds and as therapeutic immuno-agents. Recently, biological activity of oxime compounds has attracted more interest. The study of oxime-ether derivatives have shown much more interest in their antiprotozan, anti-bacterial, antiretroviral, antifungal, antineoplastic and antimicrobial activities. DNA binding ability is an important criteria for imaging anticancer medicals. Therefore, we aimed in this study to investigate the DNA binding activities of some new oximes synthesized from 3-keto tetradecanoic acid methyl ester. These oximes are 3-undecyl-4H-isoxazol-5-one (**1**), 3-methoxyimino-tetradecanoic acid methyl ester (**2**) and 3-benzyloxyimino-tetradecanoic acid methyl ester (**3**).

These compounds **1**, **2** and **3** exhibited quite different activity by their interactions with pBR322 plasmid DNA. The compound **1** had strong activity against plasmid DNA due to its ring structure. The compound **2** and **3** have open chain structure, therefore they have less activity against plasmid DNA. These compounds **1**, **2** and **3** in high concentrations caused conformational changes in form I DNA and DNA cleavage. Form I DNA diminished when the DNA interacted with these compounds **1**, **2** and **3**. Linear form I DNA was seen at four high concentrations of compounds **1**, **2** and **3**. Incase of **2** and **3**, the mobility of form I DNA was decreased. The compounds **1**, **2** and **3** were also screened for their antimicrobial activity against various microorganisms for imaging new target antimicrobial medicals.

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