*FCT - 90*

# Design, synthesis, and evaluation of 2, 3-disubstituted quinazolin-4(3H)-one derivatives as urease inhibitors against *Helicobacter pylori*

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*Helicobacter pylori* is a pathogenic bacterium that causes ulcers and inflammations in the stomach lining. This bacterium produces urease enzyme which catalyzes the hydrolysis of urea in the stomach to carbon dioxide gas and ammonia. Resultant ammonia neutralizes stomach acid and helps *H. pylori* to survive and colonize in the acidic environment of the stomach. Therefore, inhibition of urease is a good strategy for controlling Helicobacter pylori. In this study, a series of 2,3-disubstituted quinazolinone derivatives was designed and their binding affinities to urease enzyme were studied using molecular docking. Auto dock GOLD 5.0.3 and Discovery studio v16.1.0.15 software were used for the computational docking study. In the synthesis, anthranilic acid was reacted with benzoyl chloride followed by dehydration to form a benzoxazinone intermediate. Subsequent addition of an amine to the benzoxazinone intermediate provided fused quinazolinone, named 3-amino-2-phenylquinazolin-4(3H)-one (NE-05). An improved method was developed for the synthesis of NE-05 in solvent-free conditions. Schiff bases (NE-06, 07, 08) were synthesized by the reaction of NE-05 with aldehydes benzaldehyde, p-hydroxybenzaldehyde and formaldehyde respectively. The structures of the synthesized derivatives were confirmed using IR and NMR spectroscopy. *In vitro*, urease inhibitory activity of the synthesized compounds was evaluated using modified Berthelot's spectrophotometric method. Among the synthesized compounds, NE-05, NE-06, NE-07 and NE-08 showed an inhibitory effect of more than 50%, and among them, NE-06 and NE-07 are the two most promising compounds

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