

# ***Synthesis, Identification and Study of Antioxidant and Antidiabetic Properties of New 1,2,3-Triazole Compounds and their Derivatives***

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Partial Fulfillment of the Requirements for the Degree of master of Science in  
Chemistry

By

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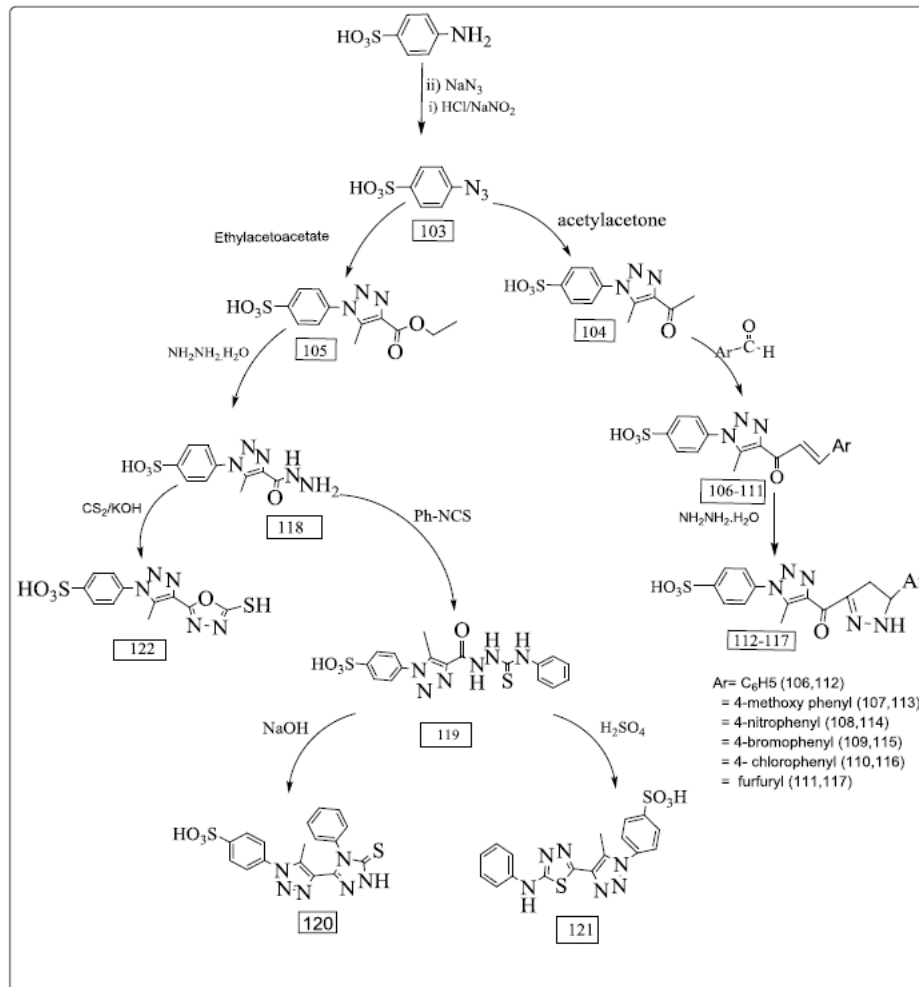
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## Abstract

In general, this thesis describes the synthesis, characterization, antioxidant study and antidiabetic activity of new 1,2,3-triazole derivatives containing chalcone moiety, 1Hpyrazoline, 1,2,4-triazole, 1,3,4-thiadiazole and 1,3,4-oxadiazole ring system as shown below:



1- P-azidobenzenesulfonic acid **103** was synthesized via reaction of diazonium salt with sodium azide.

2- Reaction of compound **103** with acetylacetone or ethyl acetoacetate under basic conditions to give 1,2,3-triazole-4-acetyl **104** and 1,2,3-triazole-4-carboxylate **105** respectively.

3- A new series of chalcone derivatives **106-111** were synthesized from condensation of 1,2,3-triazole-4-acetyl **104** with some aromatic aldehydes.

4- The chalcone derivatives **106-111** were reflux with mono hydrazine hydrate to give their corresponding pyrazoline derivatives **112-117**.

5- The second 1,2,3-triazole derivative **105** extended its structure via reaction with hydrazine hydrate to give the 1,2,3-triazole-4-carbohydrazide **118**.

6- Hydrazine-1-carbothioamide derivative **119** and 1,3,4-oxadiazole **122** were synthesized via

reaction of phenyl isothiocyanate, Carbondisulfide respectively with the synthesized acid hydrazide derivative **118**.

7- 1,2,3-triazole derivatives containing 1,2,4-triazole **120** and 1,3,4-thiadiazole **121** ring systems were synthesized through a dehydro-cyclization of compound **119** in the presence of sodium hydroxide and concentrated sulfuric acid, respectively.

8- All the synthesized compounds were characterized by FT-IR, NMR spectroscopies and Mass spectrometry.

9- Antioxidant activity of the target compounds was checked against the stable free radical 1,1-diphenyl-2-picrylhydrazyl (DPPH) by spectrophotometric method using L-ascorbic acid as a positive control. The results showed that compounds **111-122** which contain 1,2,3-triazole, 1Hpyrazoline

and 1,2,4-triazole moieties have high antioxidant activity than compounds **106-110** that contain chalcone moieties.

10- Antidiabetic activity for the synthesized compounds **106-122** was screened against  $\alpha$ -amylase enzyme using DNS method, and the results showed that some of the synthesized compounds have a promising inhibition activity and high activity of compounds **107** and **122**.