

Abstract

In general, this thesis describes the design, synthesis, characterization, thermal stability study and antioxidant activity of new heterocyclic compounds containing 1,2,3-triazole, thiazolidin-4-one and 1,3-oxazepine rings. The first aim of this thesis is synthesis two new heterocyclic compounds containing 1,2,3-triazole ring system were designed and synthesized via 1,3-dipolarcycloaddition of the synthesized *p*-azidosulfonic **62** acid with propiolic acid and acetylacetone under different conditions to give compounds **63** and **64**, respectively. On the other hand, a series of new heterocyclic compounds containing thiazolidin-4-one and 1,3-oxazepine structures were synthesized via cycloaddition reaction of schiff bases. Thus, a series of schiff bases **65-68** was prepared via reaction of 1-aminonaphthalene with *p*-substituted benzaldehyde in the presence of glacial acetic acid as a catalyst. After having the target schiff bases **65-68**, they were using to prepare some cyclic compounds containing thiazolidin-4-one ring **69-72** via the addition reaction followed by cyclic closure with 2-thiol acetic acid under reflux conditions in 1,4-dioxane for 7 hours. After that, the emphasis was then placed on using schiff bases **65-68** in another reaction to prepare some cyclic compounds containing 1,3-oxazepine ring **73-80** via condensation reaction of the synthesized schiff bases with maleic and phthalic anhydrides in presence benzene as solvent for 24 hours. All the synthesized compounds were characterized by FT-IR, NMR and Mass spectroscopies. For further investigations, the thermal behavior of the synthesized compounds was studied by TGA and DTG techniques where all the synthesized compounds displayed a thermal stability related to their structures. Subsequently, the application of all the synthesized compounds as antioxidants against DPPH was studied. The experiments results showed that all the synthesized compounds have an antioxidant activity. Furthermore, this activity varies between high, medium and weak compared with Trolox that is used as a standard reference.