EFFECT OF THE NITRO GROUP ON THE BIOLOGICAL ACTIVITY OF CHALCONE

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Flavonoids are secondary metabolites synthesized naturally by plants as a defense against external agents (herbivores, insects, etc...). These organic compounds have a wide variety of biological properties and are classified according to the differences in their fundamental core. You can find various derivatives in nature as flavonols, flavones, flavanones, anthocyanins and chalcones¹. The latter is our study material. In spite of having a natural origin, Chalcones or 1,3-diaryl-2-propen-1-ones, can be synthesized by Claisen-Schmidt condensation. This reaction occurs between derivatives of acetophenone and benzaldehyde³. In this work, we synthesized Chalcone without substituent and a nitro derivative, 1-(4-nitrophenyl)-3-phenyl-2-propen-1-one (CHALNO₂). Both compounds were obtained by Claisen-Schmidt reaction and characterized through NMR spectroscopy. The CHALNO₂ was also characterized using IR spectroscopy. The ketonic carbonyl α,β-unsaturated was observed in the carbon-13 NMR, 190.59 ppm for Chalcone without substituent and 187.9 ppm for CHALNO₂ (ketones typical region). A carbonyl band at 1663 cm⁻¹ was found in the Infrared. The antioxidant activities of the purified and characterized compounds were analyzed through the DPPH method. The DPPH inhibition percentage after 120 minutes was higher in CHALNO₂ (31%) when compared to the Chalcone without substituent (3%), both at a concentration of 25mg / mL. The reading at 1200 minutes showed that the inhibition rate increased, reaching 43% (CHALNO₂) and 16% (Chalcone). Thus, it was concluded that the NO₂ group inclusion favored the Chalcone antioxidant power.

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Bibliographic Reference