**Investigation of α-Glucosidase Inhibitory Effects of some 7-diethylaminocoumarinthiazole Dravatives and Molecular Modeling Studies**

**Anas Hameed Mezher Mezher**

**Department of Chemistry, Faculty of Science, Cankiri Karatekin University, 18100 Cankırı,Türkiye**

**Sevki Adem**

**Department of Chemistry, Faculty of Science, Cankiri Karatekin University, 18100 Cankırı, Türkiye**

**Zeyad Adıl Hameed Hameed**

**Department of Chemistry, Faculty of Science, Cankiri Karatekin University, 18100 Cankırı,Türkiye**

**Ümmühan Özmen Özdemir**

**Department of Chemistry, Faculty of Science, Gazi University, Ankara 06500, Turkey Türkiye**

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| **ABSTRACT** Diabetes mellitus is one of the most important health problems affecting the quality of life of people worldwide, especially in developing countries. According to the World Health Organization reports, the number of patients with diabetes is approximately 420 million, this number is estimated to be 642 million in 2040. There are 2 main types of diabetes: the body cannot produce enough insulin in type 1 diabetes (T1DM) and in type 2 diabetes (T2DM), the body cannot use insulin properly. Patients with T1DM are treated with insulin injections; Oral glucose-lowering drugs are used in patients with T2DM.Oral antihyperglycemic drugs used in the treatment of type 2 diabetes mellitus have different mechanisms. α-Glucosidase inhibitors are one of the most important inhibitors among them. The antidiabetic effect of the 7-diethylaminocoumarinthiazoles, which have very rich in activity, draws attention. Therefore, this research, it was aimed to search 7-diethylaminocoumarinthiazole derivatives that could show potential antidiabetic activity. The inhibitor activity of the compounds 4, 5 and 6 were tested against α-glucosidase enzymes. Besides, molecular modeling was utilized to predict potential interactions of the synthesized compounds that exhibit inhibitory effects. The analyses conducted revealed that compound 4 has strong inhibitory effects against α-glucosidase enzymes (Binding energy: -121.365 MolDock Score, IC50: -121.365 µM), in both in vitro and in silico studies. |

# Keywords: *7-diethylaminocoumarinthiazoles, α-glucosidase inhibitory, Molecular docking*