Synthesis of Novel Inhibitors of α -Glucosidase and Carbonic Anhydrase based on 1,2,3-Triazole Derivatives of Hydrochlorothiazide (HCT) through Click Chemistry Approach

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As of 2017, interest in diabetes is blowing up, as the number of people with diabetes is expected to rise from the current estimated of 150-220 million in 2010 and 300 million in 2025. α-glucosidase and carbonic anhydrase inhibitors are thought to be valuable aids in the treatment of diabetes and glaucoma respectively. 6-Chloro-3,4dihydro-2H-1,2,4-benzothiazine-7-sulphonamide1,1-dioxide is diuretic used for hypertension which is commonly referred to as a water pill. On the basis of these study, a library of 25 novels 1,2,3-triazole derivatives of Hydrochlorothiazide was synthesized through click chemistry approach in order to find a more potent anti-diabetics and anti-glaucoma agents. The structures of all derivatives (**2-27**) were confirmed by MS, IR, ^{1}H-NMR and ^{13}C-NMR spectroscopic data. All the compounds were found to be new. These derivatives were then evaluated for the first time for their α-glucosidase and carbonic anhydrase inhibitory activity. HCT, Compounds **2** and **23-27** were found to be more active (IC_{50} = 14.4 ± 0.23, 4.27 ± 0.297, 4.1 ± 0.24, 2.3 ± 0.129, 7.2 ± 0.70, 7.43 ± 0.[illegible] 5.86 ± 0.24 μM, respectively) than the standard drug, Acetazolamide (IC_{50} = 0.12 ± 0.003 μM) against Carbonic anhydrase and compounds **26** and **27** were found to be potent active (IC_{50} = 379.26 ± 2.44, 149.77 ± 1.53 μM, respectively) than the standard drug, Acarbose (IC_{50} = 875.[illegible] ± 2.08 μM) against α-glucosidase. All the compounds were found to be non-cytotoxic.