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Research article

Synthesis of chalcone and fused rhodanine derivatives of biphosphonates active as anti-inflammatory and over breast cancer

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Abstract

There has been considerable interest for medicinal chemist in development of a promising target for new drug development. Rhodanine, thiazolidinedione (TZD) family pharmacophore, is with diverse biological activity. Chalcones are natural products belonging to flavanoid family possessed anti-cancer and anti-inflammatory activities. Phosphonates and phosphonic acids represent an important class of organophosphorus compounds. Substitutions with P-C-P linkage of the bisphosphonates can lead to extensive alterations in their physicochemical, biological, therapeutic and toxicological characteristics. Considering this biological importance, it was aimed to synthesize a novel target which comprises the bisphosphonic acid and chalcone nucleuses with fused Rhodanine. Total 11 derivatives were synthesized and screened for *In-Vitro* cytotoxic assay on MCF-7 cell line (Breast Cancer) as well as for anti-inflammatory *In-Vivo* activity by carageenan induced Rat Paw Edema Method. The synthesized compounds were confirmed by physiochemical and spectral data. Among all 11 synthesized derivatives, 4th, 7th and 9th showed potent inhibition of inflammation when compared with Indomethacin as standard and promising results when screened over MCF-7 cell line against Letrozole.

Keywords: Biphosphonates, Anti-Cancer, Chalcone, Rhodanine, Anti-Inflammatory

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