Indian Journal of Heterocyclic Chemistry
Vol. 30 - Number 03 (Jul-Sep 2020) 369-379
DocID: https://connectjournals.com/01951.2020.30.369

ISSN (Print) : 0971-1627
ISSN (Online) : 2456-4311

Synthesis, Antimicrobial, and Antitumor Activity of Some New Chromene Compounds

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ABSTRACT 2-Amino-7-hydroxy-4-phenyl-4*H*-chromene-3-carbonitrile **(4)** was synthesized through three-component reaction in ethanol/piperidine solution. Synthesis of several new 4*H*-chromenes (**5-14**) has been achieved involving various reactions. The structures of these new compounds were confirmed using infrared, proton nuclear magnetic resonance, and carbon-13 nuclear magnetic resonance as well as MS spectrometry. The structure activity relationship studies of the target compounds was in agreement with the *in vitro* essays and confirmed higher potent antimicrobial activity against some of the tested microorganisms. Antitumor activities of the target compounds were evaluated against three cancer cell lines HepG-2, HCT-116 and MCF-7 in comparison with 5-fluorouracil as reference drugs. The structure activity relationship study revealed that 2-amino-4-phenyl-3-(1*H*-tetrazol-5-yl)-4*H*-chromen-7-ol (**13**) was more beneficial than 8-hydroxy-2-methyl-5-phenyl-3,5-dihydro-4*H*-chromeno[2,3-d]pyrimidin-4-one (**11**), 8-hydroxy-2,5-diphenyl-3,5-dihydro-4*H*-chromeno[2,3-d]pyrimidin-4-one (**12**), and 8-hydroxy-5-phenyl-3,5-dihydro-4*H*-chromeno[2,3-d]pyrimidin-4-one (**14**) for antimicrobial and antitumor activity.

KEYWORDS Resorcinol, Aromatic aldehydes, Hydrazine hydrate, Antimicrobial and antitumor activities.

How to cite this article: Abd El-Wahab, A.H.F., Khfsha, M.H.M., Abdali, A.H.H., Al Maliki, M.Y.M. Synthesis, Antimicrobial, and Antitumor Activity of Some New Chromene Compounds, *Indian J. Heterocycl. Chem.*, **2020**, *30*, 369–379. *(DocID: https://connectjournals.com/01951.2020.30.369)*