

Synthesis and Bioactivity of Coumarin Carboxylate Complexes

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Metal carboxylates and dicarboxylates have previously been shown to have activity as antimicrobials¹. Coumarins and coumarin complexes have also shown activity as antimicrobials and chemotherapeutics^{2,3}. Combining coumarins and carboxylates/dicarboxylates allows for the synthesis of a novel series of complexes with interesting biological activity.

The first compounds synthesized were substituted coumarin-3-carboxylic acids (fig.1) which were then complexed with silver(I) and copper(II). The second set of compounds isolated were 4-substituted coumarin-6,7-dioxyacetic acids (fig.2) which were then reacted with copper(II) and manganese(II). The copper(II) carboxylates were reacted further with various N-donor ligands to give a series of adducts.

The complexes were characterized using IR, NMR, Magnetic moment, AAS, CHN and X-ray crystallography where appropriate crystals could be isolated. The carboxylate/dicarboxylate complexes were finally tested for their biological activity in 3 different areas. 1) Antimicrobial activity against both gram+/gram- and fungal isolates including MRSA, *E.coli* and *Candida albicans* 2) Chemotherapeutic activity against cancer cell lines [HepG2 (liver) and A498 (renal)] 3) Superoxide dismutase (SOD) mimics using Xanthine/NBT assay.

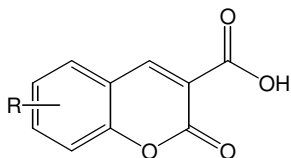


Fig.1 Coumarin-3-carboxylic acid

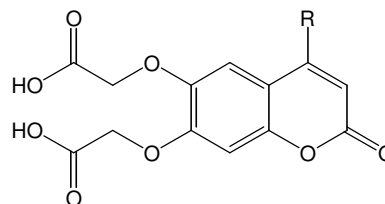


Fig.2 Coumarin-6,7-dioxyacetic acid

1. Geraghty et al., *Biometals*, 13, (2000), 1-8
2. Finn et al., *Cancer Letters*, 183, (2002), 61-98
3. Manolov et al, *Eur. J. Med. Chem.*, 34, (1999), 853-858

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