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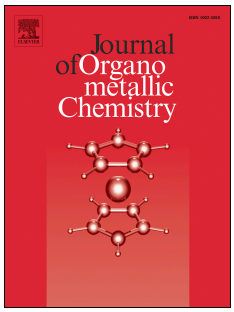

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Ruthenium Carbonyl Containing 4-Pyrones as Potent Anticancer Agents ☆

V.D. Reddy,* Divya Dayal,[†] David J. Szalda,[§,‡] Stephen C. Cosenza,[#] M.V. Ramana Reddy[#]

**Department of Physical Sciences, Kingsborough College of The City University of New York, 2001 Oriental Blvd., Brooklyn, NY 11235 and The Graduate Center of the City University of New York, 365 Fifth Avenue, New York, New York 10016. [†]College of Human Ecology, Department of Human Development, Cornell University, Ithaca, NY 14853. [§]Department of Natural Sciences, Baruch College-CUNY, 17 Lexington Ave., New York, NY 10010 17. [#]Department of Oncological Sciences, Icahn School of Medicine at Mount Sinai, 1425 Madison Avenue, New York, NY 10029.*

Four new triruthenium carbonyl containing 4-pyrones: $Ru_3(CO)_8$(2L-2H) **1** (L = ethylmaltol), $Ru_3(CO)_7$(PTA) (2L-2H) **2** (L = ethylmaltol, PTA = 1,3,5 triaza-7-phosphaadamantane), $Ru_3(CO)_8$(2L-2H) **3** (L = allomaltol), $Ru_3(CO)_7$(PTA)(2L-2H) **4** (L = allomaltol, PTA = 1,3,5 triaza-7-phosphaadamantane) have been synthesized and characterized. Anticancer activity of compounds **1-4** has been evaluated in vitro against five types of human cancer cell lines and compared with clinically used drug cisplatin. Anticancer activity of compound **1** is an order magnitude more potent than cisplatin against five types of human cancer cell lines. Compounds **1** and **2** with ethyl group at 2-position is more active than the compounds **3** and **4** with methyl group at 6-position. Substitution of a CO ligand with PTA decreases the activity following the order **1**>**2** and **3**<**4**. The single crystal X-ray structure of compound **1** shows two Ru-CH_2-H_2C-H---O-Ru interactions: one ethyl group C(217)-C(218) bonded to Ru(2) folded towards ruthenium Ru(3) to form Ru(2)-CH_2-H_2C-H--O-Ru(3) interaction and the second ethylmaltolato ligand C(317)-C(318) bonded to Ru(3) folded towards Ru(2) to form Ru (3)-CH_2-H_2C-H---O-Ru(2). Proton NMR shows a well-resolved multiplet instead of a simple quartet for methylene protons indicating asymmetric environment.

☆Dedicated with inspiration and appreciation to Prof. Richard D. Adams on the occasion of his 70th birthday.

* Corresponding author. E-mail address: vreddy@kingsborough.edu. (V.D. Reddy)
[‡]Research collaborator in the Chemistry Department, Brookhaven National Laboratory, Upton, NY 11973-5000.