Synthesis, characterization and in vitro biological evaluation of [Ru(?6-arene)(N,N)Cl]PF6 compounds using the natural products arenes methylisoeugenol and anethole

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 Abstract Five new organometallic Ru(II) compounds (VI-X) with the general formula [Ru(?6-arene)(N,N)Cl]PF6, where arene-N,N correspond to methylisoeugenol-bipyridine (VI); anethole-bipyridine (VII); methylisoeugenol-ethylenediamine (VIII); anethole-ethylenediamine (IX) and methylisoeugenol-1,2-diaminobenzene (X), have been synthesized, fully characterized and biologically evaluated in vitro. The reaction conditions based on the reduction of [Ru(1,5-COD)Cl2]n in situ with methyleugenol and estragole, which are natural ligands, induced an alkene isomerization on the allylic substituent of coordinated arenes. The Ru(II)-arene bond formation and isomerization of the CC bond on the allyl substituent was confirmed using 1H NMR spectroscopy; this result was validated for compound VIII by X-ray diffraction. An XRD analysis revealed the presence of both enantiomers of the complex in the single-crystal. Compounds IX and X exhibited a better cytotoxic act