

## Anticancer Activity of Metal Complexes with Acesulfame Mixed with Triphenylphosphine Ligands

Bussaba Boonseng\*, Teerawat Khudkham,  
Sutthida Wongsuwan, and Jaruwat Chatwichien

Faculty of Science, Naresuan University, Phitsanulok 65000, Thailand

\*Corresponding author. E-mail: bussabab@nu.ac.th

<https://doi.org/10.12982/CMUJNS.2019.0029>

Received: November 6, 2018

Revised: March 1, 2019

Accepted: March 18, 2019

### ABSTRACT

*Metal complexes of silver(I), nickel(II) and copper(II) with the mixed ligands of acesulfame (ace) and triphenylphosphine (PPh<sub>3</sub>) were prepared in this work. The complexes of [Ag(ace)]<sub>n</sub> (1), [Ag(ace)(PPh<sub>3</sub>)] (2), [Ni(ace)<sub>2</sub>(H<sub>2</sub>O)<sub>4</sub>] (3), [Ni(ace)<sub>2</sub>(PPh<sub>3</sub>)<sub>2</sub>] (4), [Cu(ace)<sub>2</sub>(H<sub>2</sub>O)<sub>2</sub>] (5) and [Cu(ace)<sub>2</sub>(PPh<sub>3</sub>)<sub>2</sub>] (6) were characterised by FT-IR and NMR spectroscopy, Mass spectrometry including X-Ray powder diffraction. The synthesised complexes were examined in their anticancer activity against A549 lung cancer cells which were further evaluated their efficiency by IC<sub>50</sub> method. [Ag(ace)]<sub>n</sub> (1), [Ni(ace)<sub>2</sub>(H<sub>2</sub>O)<sub>4</sub>] (3) and [Cu(ace)<sub>2</sub>(H<sub>2</sub>O)<sub>2</sub>] (5) which contain only acesulfame ligand exhibited higher IC<sub>50</sub> values in comparison to the mixed ligands of ace and PPh<sub>3</sub>. [Ag(ace)(PPh<sub>3</sub>)] (2), [Ni(ace)<sub>2</sub>(PPh<sub>3</sub>)<sub>2</sub>] (4) and [Cu(ace)<sub>2</sub>(PPh<sub>3</sub>)<sub>2</sub>] (6) displayed the inhibition in the growth of cancer cells with IC<sub>50</sub> values of 1.65, 13.45 and 1.06 μM, respectively. Additionally, silver(I) and copper(II) complexes also presented better activity than the standard Etoposide (IC<sub>50</sub> 5.623 μM). The results indicated that the mixed ligands could perform more excellent inhibition of cancer cells growing in comparison to the using of only acesulfame or triphenylphosphine ligand.*

**Keywords:** Complexes, Acesulfame, Anticancer, Triphenylphosphine