ABSTRACT

SYNTHESIS OF *N*-BENZOYL-*N'*-PHENYLUREA DERIVATIVES AND QUANTITATIVE STRUCTURE-ACTIVITY RELATIONSHIP AS CYTOTOXIC AGENT IN HeLa CELL LINES

According to some research, urea has a pharmacophore for cytotoxic activity, so four analogs of *N*-benzoyl-*N'*-phenylurea (i.e *N*-benzoyl-*N'*-phenylurea; *N*-(4-methylbenzoyl)-*N'*-phenylurea; *N*-(4-methoxybenzoyl)-*N'*-phenylurea; *N*-(4-tertiary-butylbenzoyl)-*N'*-phenylurea) was developed as a cytotoxic agent. The first step of the study, these analogs were studied its interaction with p38α protein as a target by docking methods. From the docking results produced that all compounds have lower rerank score than hydroxyurea, as reference compound. The second step of the study, the compounds were synthesized by reacting to *N*-phenylurea with benzoyl chloride derivative by Schotten Baumann reaction. Identification of the compounds structure was analyzed by UV-vis spectrophotometer, infrared spectrophotometer, and nuclear magnetic resonance spectrometer. And the last step, the cytotoxic test was performed in vitro by using MTT assay to HeLa Cell lines. From the cytotoxic test results produced that all compounds have lower IC_{20} than hydroxyurea and have a quantitative structure-activity relationship between steric parameter with cytotoxic activity with equation Log $(1/IC_{20})$ = 0,115 CMR – 3,175 (n= 4; r = -0,980; SE = 0,023; Sig. = 0,020).

Keywords: *N*-benzoyl-*N'*-phenylurea analogs, QSAR, cytotoxic activity, HeLa cell lines