

**ABSTRACT****THE ANTICANCER ACTIVITY COMPARISON  
BETWEEN *N*-4-CHLOROBENZOYL-*N'*-(4-  
FLUOROPHENYL) AND *N*-BENZOYL-*N'*-(4-  
FLUOROPHENYL) COMPOUNDS USING *IN SILICO*  
ASSAY TOWARDS SIRTUIN 1 AND USING *IN VITRO*  
ASSAY TOWARDS T47D CELL**

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Breast cancer is still one of the most frequent malignancy which its incidence and mortality remains high among others cancer on female. However cancer treatment is still yielding adverse effects by killing non specific fast grown normal cells. Therefore new cancer drug without this unwanted effect needs to be developed optimally. Urea derivatives are known for having cytotoxic activity. *N*-benzoyl-*N'*-(4-fluorophenyl) thiourea and *N*-4-chlorobenzoyl-*N'*-(4-fluorophenyl)thiourea, with urea's pharmacophore, are predicted to have great characteristics and low toxicities. With in silico method, *N*-4-chlorobenzoyl-*N'*-(4-fluorophenyl) thiourea and *N*-benzoyl-*N'*-(4-fluorophenyl)thiourea were docked with SIRT1 receptor (PDB ID: 4i5i) using Molegro Virtual Docker ver 5.0. With in vitro method, T47D cells were treated with *N*-4-chlorobenzoyl-*N'*-(4-fluorophenyl)thiourea and *N*-benzoyl-*N'*-(4-fluorophenyl)thiourea and evaluated by MTT assay. *N*-4-chlorobenzoyl-*N'*-(4-fluorophenyl)thiourea's (-114.223 Kcal/mol) rerank score showed lower value than *N*-benzoyl-*N'*-(4-fluorophenyl)thiourea's (-110.766 Kcal/mol), where as lower rerank score will provide lower bond energy between compound and receptor. *N*-4-chlorobenzoyl-*N'*-(4-fluorophenyl)thiourea and *N*-benzoyl-*N'*-(4-fluorophenyl)thiourea are predicted to have anticancer activity using in silico method towards SIRT1 (PDB ID: 4i5i) receptor. By in vitro method, T47D cells were treated with *N*-4-chlorobenzoyl-*N'*-(4-fluorophenyl)thiourea and *N*-benzoyl-*N'*-(4-fluorophenyl)thiourea and evaluated by MTT assay using ELISA. *N*-4-chlorobenzoyl-*N'*-(4-fluorophenyl)thiourea's (325.821  $\mu$ M) IC<sub>50</sub> showed lower concentration than *N*-benzoyl-*N'*-(4-fluorophenyl)thiourea's (1519.933  $\mu$ M). In this study, *N*-4-chlorobenzoyl-*N'*-(4-fluorophenyl)thiourea and *N*-benzoyl-*N'*-(4-fluorophenyl)thiourea showed an anticancer activity by using in vitro method towards T47D cell line. Therefore, *N*-benzoyl-*N'*-(4-fluorophenyl)thiourea and *N*-4-chlorobenzoyl-*N'*-(4-fluorophenyl)thiourea, are potential as a new anticancer treatment for breast cancer.