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Evaluation of quinoxaline-1,4-dioxide and derivatives Biological Activity in normal and tumour cell

LILIANA SILVA[1,3], PEDRO COELHO[2,3], RAQUEL SOARES[4,5], CRISTINA PRUDÊNCIO[2,3,5], MÓNICA VIEIRA[2,3]

1- Escola Internacional de Doutoramento (EIDO), Universidade de Vigo, Espanha;
2- Ciências Químicas e Biomoléculas, Escola Superior de Saúde do Porto, Politécnico do Porto, Portugal;
3- Centro de Investigação em Saúde Ambiental (CISA), Escola Superior de Saúde do Porto, Politécnico do Porto, Portugal;
4- Departamento de Bioquímica da Faculdade de Medicina, Universidade do Porto;
5- Instituto de Inovação e Investigação em Saúde da Universidade do Porto, Portugal.

Introduction: Quinoxaline derivatives are synthetic heterocyclic compounds with multiples pharmacological applications and biological effects. Previous studies of our group about the biological activity in eukaryotic and prokaryotic microbial models with quinoxaline-1,4-dioxide (QNX) derivatives concluded a selective antimicrobial activity in gram negative strains. To further evaluate these compounds' potential, we investigated the biologic activity *in vitro* of this chemical structures in normal and tumour cells lines.

Material and Methods: The compounds in study were gently provided by the Centre of Investigation in Chemistry of the University of Porto. Quinoxaline-1,4-dioxide (QNX); 2-amino-3-cyanoquinoxaline-1,4-dioxide (2A3CQNX); 2-methylquinoxaline-1,4-dioxide (2MQNX); 3-Methyl-2-quinoxalinecarboxamide-1,4-dioxide (3M2QNXC) and 2-Hydroxiphenazine-N-dioxide (2HF), were tested in sixteen different final concentrations. Mouse fibroblast 3T3-L1 (ATCC® CL-173™), human dermal microvascular endothelial cells (HMVEC-D), mouse melanoma B16-F10 (ATCC® CRL-6475™), human malignant melanoma MeWo (ATCC® HTB-65™), mouse Glioma cell line GL-261 and mouse brain tumour BC3H1 (ATCC® CRL-1443™) were used in this work. The cell viability was determinate used MTT Assay (4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) from (Sigma-Aldrich, Co., USA). The IC_{50} was calculated using the GraphPad software with the results of cell viability assay, for all line cells and concentrations in study.

Results and Conclusions: The IC_{50} concentrations of QNX, 2MQNX and 3M2QNCX presented high values compared with other compounds. 2A3CQNX and 2HF IC_{50} concentrations exhibited a strong influence in all cell lines. In conclusion, our results demonstrated the influence of quinoxaline-1,4-dioxide (QNX) and derivatives in cell viability in normal and tumour cells. 2A3CQNX and 2HF induced a modulative action in cells survival mechanisms, with IC50 concentrations calculated in all cell lines in study.

Keywords: quinoxaline-1,4-dioxide and derivatives, normal and tumour cell, IC_{50}