PY3: Cytotoxicity Assessment and the Mode of Cell Death Induced by Diorganotin(IV) Bis(2-methoxyethyl)dithiocarbamate Compounds in Human Erythroleukemia Cells (K562)

Kamaludin NF[1], Ramli N[1], Awang N[1], Mohamad R[2]

[1]Environmental Health & Industrial Safety Programme, School of Diagnostic & Applied Health Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, [2]Biomedical Science Programme, School of Diagnostic & Applied Health Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia

ABSTRACT

Introduction: Organotin(IV) dithiocarbamate is one of metal-based compounds that are actively explored by researchers due to the diversity of their molecular structures which affects their biological activities. A number of studies have found that organotin(IV) dithiocarbamate compounds have the potential to be developed as anti-cancer agents because they can induce very strong cytotoxic effects even when used at low concentrations. **Method:** Two new diorganotin(IV) dithiocarbamate compounds, which are dimethyltin(IV) bis(2-methoxyethyl) dithiocarbamate (C1) and diphenyltin(IV) bis(2-methoxyethyl) dithiocarbamate (C2) were tested for toxicity against human erythroleukemia cells (K562). The potential of both compounds to induce cytotoxicity against K562 cells was determined via 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay for a treatment duration of 24 hours. The mode of K562 cells' death induced by both compounds was determined by Annexin V-FITC/PI staining assays for treatment duration of 24 hours using the IC_{50} values for each compound. **Results:** This study found that both compounds were able to induce anti-proliferative effect against K562 cells. However, C2 showed stronger cytotoxicity against K562 cells with an IC_{50} value of 5.0 µM compared to C1 which has an IC_{50} value of 22.0 µM. Interestingly, both of these compounds were found to induce K562 cells' death via apoptosis. **Conclusion:** Both compounds showed good potential to be developed into anti-leukemic agents due to their strong cytotoxicity against K562 cells leading to induction of cell death by apoptosis. Further studies regarding the mechanisms of action of these compounds should be conducted to explore their potential to be developed into anti-leukemic agents.

KEY WORDS:
Organotin; dithiocarbamate; leukemia; apoptosis; cytotoxic

PY4: A Descriptive Study On Bone Mineral Density and Breast Density among Malaysian Women with BI-RADS 3, 4 And 5

Mohd Zain N

Diagnostic Imaging & Radiotherapy Programme, Faculty of Health Sciences, Universiti Kebangsaan Malaysia

ABSTRACT

Introduction: Mammographic breast density is a well-known risk factor of breast cancer determined by the physiological hormonal changes in a woman. Similar to bone mineral density that affected by the mentioned factor. **Methods:** This descriptive study was conducted on 25 women above 40 years old using total sampling method in Radiology Department, General Hospital Kuala Lumpur in 2016. It was to determine the pattern of breast density and bone mineral density in Malaysian women with mammogram Breast Imaging-Reporting and Data System (BI-RADS) 3, 4 and 5. Women who have had commenced cancer treatment and women with mastectomy were excluded. Assessment of breast density was performed using BI-RADS classification whistle bone mineral density was measured using DEXA of the lumbar spine and femoral neck based. **Results:** A total of 64% of the respondents were Malay followed by Indian and Chinese with 28% and 8% respectively. A total of 24% of women aged between 40 to 50 years old were diagnosed with BI-RADS 3, 4 and 5 whilst 76% of women aged above 50 years old. BI-RADS B (scattered fibroglandular) breast density was observed in 12 (48%) women, BI-RADS C (heterogeneously dense) in 5 (20%) women and BI-RADS D (extremely dense) in 2 (8%) women. A total of 19 (76%) of women with normal BMD category with t-score ≥ 1 SD. Majority (40%) of women with normal BMD has BI-RADS B breast density, women with osteopenia is highest (12%) among women with BI-RADS C breast density. **Conclusion:** There is a pattern of women with BI-RADS B breast density was diagnosed with BI-RADS 3, 4 and 5 above 50 years; nevertheless, with normal bone classification.