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Anti-proliferative and anti-angiogenic activities of thalidomide dithiocarbamate analogues

Bishoy Y A El-Aarag

Menoufia University, Egypt

Inhibition of angiogenesis is currently perceived as one of the promising strategies in the treatment of cancer. The anti-angiogenic property of thalidomide has inspired a second wave of research on this teratogenic drug. The aim of the current study is to investigate the anti-proliferative and the anti-angiogenic activities of two thalidomide dithiocarbamate analogues by determining their anti-proliferative abilities towards human umbilical vein endothelial cells (HUVECs) and MDA-MB-231 human breast cancer cell lines. Furthermore, their effects on the expression level of TNF- α and VEGF165 mRNA in MDA-MB-231 had been assessed. Moreover, we evaluated their effects on angiogenesis using HUVECs through tube formation assay and wound healing assay. Results illustrated that, MDA-MB-231 and HUVECs proliferations were not significantly affected by thalidomide at 6.25-100 μ M. Besides, thalidomide failed to block angiogenesis at similar concentrations. However, thalidomide diminished the expression level of TNF- α and VEGF165 by 27% and 34.4%, respectively. Conversely, thalidomide dithiocarbamate analogues 1 and 2 were significantly established anti-proliferative action in MDA-MB-231 and HUVECs without causing cytotoxicity. Two analogues showing powerful anti-angiogenicity in the tube formation assay and wound healing assay as well as analogue 1 demonstrated more potent inhibition ability to suppress TNF- α (79%) and VEGF165 (52%) than analogue 2, TNF- α (56%) and VEGF165 (41%). Analogue 1 consistently showed the highest potency and efficacy in all assays. Taken together, our results support the further development and evaluation of novel thalidomide dithiocarbamate analogues as anti-tumor and anti-angiogenic agents.

bishoy.yousef@gmail.com

Vitamin A and immunity in HIV+ adults from Botswana

Boitumelo Stokie Motswagole

National Food Technology Research Centre, Botswana

Diets ensuring the availability of micronutrients can provide the foundation for improving the quality of life for HIV positive individuals. The aim of this study was to investigate the efficacy of vitamin A fortified sorghum in improving the immune status of HIV positive adults in Botswana. This was a double-blind randomised placebo controlled trial. 132 HIV infected adults were randomised to receive either sorghum fortified with vitamin A (N=67) or control (N=65) micronutrients. Serum retinol, CD4 cell count and HIV viral load were assessed at baseline and every 3 months for one year. The mean serum retinol level was 1.6 μ mol/L at baseline in both groups and did not change at the end of the intervention (experiment 1.6(0.7) μ mol/L and control 1.5(6.8) μ mol/L). Similarly there was no significant improvement in the CD4 cell counts (experiment 338(228,426) cells/mm³ and control 348(220,451) cells/mm³). The fortified sorghum did not improve the immune status of the study participants. Future research is needed to investigate the contribution of micronutrient supplementation in improving immune function of HIV infected people.

Biography

Boitumelo Stokie Motswagole received her PhD in Human Nutrition from the North West University in South Africa in 2010. She is employed at National Food Technology Research Centre as a Principal Research Scientist and Head on Nutrition & Dietetics Department. She started the Nutrition & Dietetics Department at the centre and through her hard work the department has grown to what it is today. Her main job is to conduct research aimed at improving the nutritional status of individuals, households, communities and the entire Botswana population and also conduct studies that provide evidence for the solutions nutritional problems that do exist in Botswana. She is considered an expert in body composition analysis. She has worked on numerous projects assessing body composition of individuals and has presented on the topic of fat distribution patterns in several fora. Her expertise is recognized by the International Atomic Energy Agency hence has been engaged in providing expert services in this area to several research groups in Africa. In addition, she has delivered nutritional education talks to various institutions around the country.

stokie@naftec.org