

Comparative study of the cyto-genotoxicity effect of the leaves extracts of *Annona muricata*, *Dacryodes edulis* and *Persea americana* using *Allium cepa* L. assay and cell line culture

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The screening of three plant extracts (*Annona muricata*, *Dacryodes edulis* and *Persea americana*), which have been of significant interest to scientists; in the search for novel drugs for better effective treatment of a number of diseases. These plants' extracts and phytochemicals (a natural product from plants) with known medicinal properties can be of great significance in therapeutic treatments.

There are limited number of literatures from Nigeria on the cytotoxic and genotoxic effects of the effective concentrations of the aqueous extracts of the leaves of *Annona muricata*, *Dacryodes edulis* and *Persea americana* using *Allium cepa* L. assay and cell lines.

There is a global common belief amongst medicinal plant users, that drugs derived from plants are always safe because they are "natural". However, several evidences from scientific investigations suggest otherwise. Scientific investigations (*in vitro* and *in vivo* assays) have revealed that many plants used as food or in traditional medicine have mutagenic and/or carcinogenic effects. The cytotoxicity and genotoxicity of some medicinal plants/herbs extracts, infusions, essential oils and fractions of many extracts have been widely evaluated using cytogenic approaches/assays.

Vero cells are used for numerous research purposes, such as host cells for growing viruses which are subsequently used for the production of vaccines and also in cancer research to determine suitable drugs (synthetic- chemicals or natural-plants) for the selective destruction of different types of cancer.

Biography

Nneka A. Akwu is a graduate student of Cell and Molecular Biology and she has contributed to the writing of some journals and co-authored an international journal (her B.Sc. Project research). She is also a member of the Nigerian Society for Experimental Biology. Her area of research for her Doctorate is on Cancer Management using Novel Lead molecules from lower plants.

The role of the arginine/NO metabolism in cancer cachexia and surgical oncology

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A malignant tumor develops via the multistep process of carcinogenesis. In the first phases of the carcinogenesis, the tumor is able to grow because it creates a shield against the host's anti-tumor immune attack. In the progressive phase of the malignant disease, the tumor promotes angiogenesis, shows invasive growth, metastasizes and may cause cancer cachexia. The amino acid arginine and its derivate nitric oxide (NO) play essential roles in both phases. Arginine functions as an essential substrate for the anti-tumor immune system, especially T-lymphocytes. NO may prevent malignant outgrow by activating tumor suppressor genes and causing apoptosis in these cells. However, malignancies subvert these anti-tumor mechanisms by interfering with arginine/NO metabolism by inducing myeloid derived suppressor cells (MDSC), that produce the arginine converting enzymes arginase and inducible nitric oxide synthase (iNOS). This may contribute to malignant outgrow and development of cancer associated opportunistic syndromes, for example cancer cachexia. The arginine/NO pathway is an interesting area in the field of cancer metabolism to disentangle and it may be a promising point of application for new therapeutic strategies. In our research, we investigate the effect of the presence of a malignancy on arginine/NO metabolism. In experimental models, we determine the changes in metabolism of the amino acids involved in arginine synthesis. We look into the changes of the arginine/NO metabolism on whole body level and cellular level and we are searching for new nutritional interventions to counteract the perturbation in arginine/NO metabolism to improve oncological outcome.

Biography

Nikki Buijs is a medical doctor, working in the field of experimental surgical oncology. She is working as a research fellow at the Department of Surgery of the VU University Medical Center and Medical Center Alkmaar. Her research focuses on arginine/NO metabolism in surgical cancer patients. She determines the role of arginine and NO in cancer development and she investigates the therapeutic effects of arginine enriched nutrition in this patient population. She has received several grants and a prestigious award for her research.