CHEMOPREVENTIVE PROPERTIES OF SELECTED PIGMENTED RICE, FRUITS, AND VEGETABLES IN THE PHILIPPINES

Rosario S. Sagum, Ph.D., Aida C. Mallillin, Melissa S. Borlagdan, and James David S. Alcantara

Background:
Dietary patterns with higher intake of fruits, vegetables, and whole grains, which set apart the oriental diet from the Western diet, have been associated with lower risk of various cancers. Higher intakes of dietary phenolic compounds could lead to potential antioxidant activities and reduce the risk of certain chronic diseases.

Objective:
The study aimed to determine the antioxidant activity and polyphenol content of selected fruits, vegetables, and pigmented rice. They were also tested for in vitro cytotoxicity cell viability assay towards breast and lung cancer cell lines and normal cell lines.

Materials and Methods:
Selected fruits, vegetables, and types of pigmented rice were analyzed for antioxidant capacity, total polyphenol content, and in vitro cytotoxicity activity using the MTT cell viability assay.

Results and Findings:
Samples with the highest amount of percentage inhibition of DPPH radical (% DPPH inhibition) are as follows: mangosteen peels (89.03±0.32 %), okra (89.05±0.24%), and raw violet rice (79.07±1.22%).

Samples with the highest FRAP content (g Trolox equiv./100g sample) are mangosteen peels (11.84±0.12), saluyot (2.27±0.05), and raw red rice (0.39±0.01).

Samples with the highest total phenolic content (g Gallic Acid eq./100g sample) are mangosteen peels (6.25±0.11), swamp cabbage (2.58±0.03) and raw red rice (1.25±0.02).

Out of all the samples analyzed for cytotoxicity assay, only the methanolic crude extract of soursop showed reactivity towards the breast cancer cell line and did not exhibit cytotoxic effects towards normal cell lines. Crude extracts of mangosteen peels exhibited reactivity towards both breast and lung cancer cell lines; however, it is cytotoxic to normal cell lines.

Conclusion and Recommendations:
All samples analyzed using spectrophotometric methods exhibited antioxidant capacities and total phenolic content. In the in vitro cytotoxicity assay, methanolic crude extracts of soursop are shown to suppress breast cancer cell lines without damaging normal cell lines. However, mangosteen peels extract showed reactivity towards cancer and normal cell lines, indicating that it may not be selective in targeting the cancer cells alone. Further studies are necessary to establish safe dosage, a better understanding of mechanisms, and genetic toxicity of the crude extract of mangosteen peels.