Combing luteolin and indole-3-carbinol exerts a synergistic effect on inhibiting estrogen receptor-positive breast cancer in both Caucasian and African American women.

Abstract

Estrogen Receptor-positive (ER+) breast cancer (BC), constituting 75% of cases, displays a considerable health gap among African American women (AAW) compared to Caucasian American women (CAW). This BC discrepancy among AAW is partly caused by lower fruit and vegetable diet. Phytochemicals, such as luteolin (LUT) from broccoli, celery, and peppers and indole-3-carbinol (I3C) from cruciferous vegetables, display anti-cancer potential. Nonetheless, there is a big gap in phytochemical dose between in vitro investigations and human physiological levels. In order to jointly produce an anti-breast cancer impact, we proposed combining two or more phytochemicals at comparatively low concentrations to synergistically suppress BC. We conducted tests to investigate if ER+ breast cancer cells from AAW(ZR7530) and CAW (MCF-7) will respond similarly to combined LUT and I3C in terms of anti-breast cancer effects and mechanisms. We showed that combinations of LUT and I3C (I3C40μM + LUT30μM, I3C60μM + LUT30μM) exerted synergistic anti-proliferative effects in cells both from AAW and CAW, while the individual chemicals at the relevant concentrations (I3C40μM, LUT 30μM, I3C60μM) did not have significant effects, and the synergistic effects of the combinations are similar between AAW and CAW-derived ER+ breast cancer cells. Soon, more findings from animal research, apoptosis, and the cell cycle should be anticipated. These findings support the novel notion that eating foods high in phytochemicals may reduce the risk of getting ER+ breast cancer, especially among AAW, who had higher rates of ER+ BC mortality and lower rates of fruit and vegetable consumption.