

Holothuria cinerascens and Holothuria impatiens' Cuvierian Tubules Extracts Decrease HCT-116 Colon Cancer Cells' Viability

Kekumano, Kaeo (School: Kamehameha Schools Kapalama Campus)

Colon cancer is a leading cause of death worldwide. Sea cucumbers are a potential source of medicinal compounds and have been consumed in traditional Chinese medicine. Thus, it was hypothesized that extracts of *Holothuria cinerascens* and *Holothuria impatiens*' cuvierian tubules would be effective in treating HCT-116 colon cancer cells. These two species have not been investigated in cancer research before. It was discovered that the *H. cinerascens* body wall must be cryogenically homogenized before being extracted in a MeOH solvent to induce significant viability reduction in HCT-116 cells ($p < 0.05$). *H. impatiens*' cuvierian tubules MeOH extract consistently showed significant HCT-116 cell viability reduction, despite not being cryogenically homogenized. Liquid Chromatography–Mass Spectrometry (LC-MS) identified several triterpene glycosides in both the *H. cinerascens* and cuvierian tubule MeOH extracts. Using SRB and XTT assays, dilutions from both extracts showed significant HCT-116 cell viability reduction ($p < 0.05$); however, at lower dilutions, no significant effect on HEK293 cell viability (a non-cancerous cell line) were shown. Additionally, at serial dilutions of 10% and 1%, the *H. cinerascens* extracts have shown to significantly inhibit the migration of HCT-116 cells across a scratch. At 10% and 1% dilutions, both extracts have also shown to significantly suppress HCT-116 colony formation, which implies that the extracts may reduce HCT-116 cells' reproductive viability and survival rate. This study demonstrates that MeOH extracts of *H. cinerascens* body walls and *H. impatiens*' cuvierian tubules inhibit cell proliferation and colony formation, suppress cell migration, and reduce cell viability and adhesion of HCT-116 colon cancer cells.