1. **Cranberry: a powerful anti-cancer superfruit for patients with lung adenocarcinoma**

**Global Integrative Oncology: Use in Cancer Treatment & Patient Management**

**Background:** Lung cancer is the leading cause of mortality due to cancer related cases, for lung

cancer makes up around 25% of all cancer deaths. Cranberry is rich in bioactive components and

its beneficial effects on immunity, urinary tract, and cardiovascular health have been reported.

However, the role of cranberry in lung cancer has only been investigated in large cell lung

cancer. Nothing is known about its role in lung adenocarcinoma. This study was performed to

investigate if cranberry extract (CE) could be beneficial for patients with lung adenocarcinoma

and its possible molecular mechanisms.

**Methods:** Clonogenic survival assay, cell proliferation, and caspase-3 activity kits were used to

evaluate the effects of PE on cell survival, proliferation and apoptosis of A549, a widely used

lung adenocarcinoma cell line. We further investigated the possible molecular mechanisms by

using RT-PCR.

**Results:** We found that the percentage of colonies and the OD value of A549 cells decreased in

the CE group compared to those only in medium. The relative caspase-3 activity in cancer cells

increased in the CE group compared to those in medium alone group. The anti-proliferative

effect of CE on cancer cells correlated with downregulation of pro-proliferative molecule cyclin

E, cdk2, and cdk4. The pro-apoptotic effect of the CE correlated with downregulation of

anti-apoptotic molecule FLIP.

**Conclusions:** CE has an anti-cancer effect on lung adenocarcinoma cells by inhibition of

proliferation and promotion of apoptosis. This suggest that cranberry might be a powerful

anti-cancer superfruit for patients with lung adenocarcinoma

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