

HEALTHY CELLULAR FUNCTION

BACKGROUND:

The Mediterranean diet (MD) is a combination of foods rich in antioxidants and anti-inflammatory nutrients with extra-virgin olive oil (EVOO) being a major component. The health beneficial properties of EVOO are attributed to phenolic compounds, including phenolic alcohols, hydroxytyrosol and tyrosol, as well as secoiridoids such as oleocanthal (OC), oleacein (OLC), oleuropein and others. Oleolive has patented a scalable process of extraction of these phenols, and we term this mixture Oligen. Secoiridoids, like OC and OLC, have antioxidant, anti-inflammatory, and anti-proliferative properties and, therefore, are predicted to exhibit anti-cancer activity. There are multiple reviews and over 35 peer reviewed papers that demonstrate the anti-cancer and preventive nature of OC and other EVOO compounds (1-5).

TAKE HOME MESSAGE:

Cancer incidence and mortality world-wide are major health issues and to a large extent are driven by unhealthy lifestyles and the environment. The MD is considered one of the healthiest dietary plans in the world and epidemiological studies support the health benefits and importance of EVOO in cancer prevention. OLIGEN, extracted from EVOO, is a mixture of phenolics and secoiridoids enriched in OC, and as highlighted below, clinical and preclinical data support this mixture to be a potent anti-cancer and preventive cocktail.

SUPPORTIVE CLINICAL DATA:

Clinical trials, the gold standard, have been initiated to study the impact of OLIGEN-rich EVOO consumption on cancer. Data from a 2015 study (6) suggest the consumption of EVOO with high phenolics combined with a Mediterranean diet reduces the incidence of breast cancer in women by 60%. A recent published clinical trial study (7) demonstrated the consumption of phenolic-rich EVOO could be a promising dietary feature for the improvement of chronic lymphocytic leukemia (CLL) inducing the apoptosis of cancer cells and improving the metabolism of the patients. A published study from Harvard concluded that daily consumption of high phenolic EVOO reduced death by cancer by 19% (8)

SUPPORTIVE PRECLINICAL DATA:

- *In vitro* and *in vivo* data support that OC/OLC is active against a variety of cancer types including, colon cancer, liver cancer, breast cancer, prostate cancer, lung cancer, melanoma, skin cancer and multiple myeloma. A significant number of these publications are from the laboratory of Dr. Khaled El Sayed, (reviewed in (9)) the company's science advisor.
- OC and OLC impacts multiple processes critical to cancer progression, including 1) proliferation, 2) apoptosis, 3) cancer cell motility and invasion and 4) recurrence.
- Inhibition of these processes by OC and OLC are largely attributed to the strong anti-oxidative and anti-inflammatory properties of this mixture.
- In addition, although the primary target of engagement for OC and OLC is yet to be identified, OC has been demonstrated to target c-Met, an oncogenic receptor tyrosine kinase critical in multiple pathways contributing to cancer progression and metastasis, as well as mTOR, STAT-3, SRC, Twist and other oncogenic targets.
- Published studies reveal that OC in combination with standard of care cancer treatments may demonstrate synergistic effects.

REFERENCES:

1. <https://pubmed.ncbi.nlm.nih.gov/33513799/>
2. <https://pubmed.ncbi.nlm.nih.gov/32449241/>
3. <https://pubmed.ncbi.nlm.nih.gov/31639094/>
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9. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7865905/>

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