LEMON & ORANGE ESSENTIAL OIL AND CANCER

By Miguel Sarria

Lemon and Orange essential oil from Young Living contains approximately 59-73% and 85-96% limonene respectively and limonene is a monoterpene (MTs).

Studies have shown that limonene, and monoterpenes specifically, have anti-cancer effects. Limonen increase the levels of liver enzymes involved in detoxifying carcinogens. The Glutathione S-transferase (GST) is a system which eliminates carcinogens. Limonene seems to promote the GST system in the liver and small bowel, thereby decreasing the damaging effects of carcinogens. Animal studies demonstrated that dietary limonene reduced mammary tumor growth.

A study by Mark Brudnak, Ph.D. ND¹ explains that the monoterpenes, found in essential oils offer some hope in the struggle to prevent and treat cancer. The best news is that DL and POH can not only prevent but also treat cancer. That is to say, the MTs can act before a cancer is established and in the cases where cancer is already present, they can cause a regression of the tumor.

They do this in four ways:

First, during the initiation phase of carcinogenesis they induce (cause the body to make more of) Phase II[13] carcinogen-metabolizing enzymes, resulting in carcinogen detoxification. An example of such a Phase II enzyme would be glutathione S-transferase.²

Second, post initiation phase, they have been shown to increase cell redifferentiation. This causes the potential cancer cells to take on a more normal morphology.

Third, they can induce apoptosis in otherwise immortalized (see above) cells.

Fourth, they have been shown to inhibit the isoprenylation³ of the cellular products (Ras⁴) of oncogenes. Simply put, the proteins from oncogenes, which on the whole are cell-growth regulating proteins, need to be modified (referred to as 'post-translational modification') by a process called prenylation in order to be placed in a membrane where they are active. If the proteins from oncogenes do not undergo isoprenylation, they do not cause the cell to behave as a cancer cell and hence cancer inhibition results.

Detailed information on this study is found: www.positivehealth.com/articles/cancer/353

¹ Cancer-Preventing Properties of Essential Oil Monoterpenes D-Limonene and Perillyl Alcohol. by Mark Brudnak, Ph.D. ND. listed in cancer, originally published in issue 53 - June 2000
Monoterpenes are found in the essential oils of many plants including fruits, vegetables, and herbs. They prevent the carcinogenesis process at both the initiation and promotion/progression stages. In addition, monoterpenes are effective in treating early and advanced cancers.

Monoterpenes such as limonene and perillyl alcohol have been shown to prevent mammary, liver, lung, and other cancers. These compounds have also been used to treat a variety of rodent cancers, including breast and pancreatic carcinomas. In addition, in vitro data suggest that they may be effective in treating neuroblastomas and leukemias. Both limonene and perillyl alcohol are currently being evaluated in phase I clinical trials in advanced cancer patients.

The monoterpenes have several cellular and molecular activities that could potentially underlie their positive therapeutic index. The monoterpenes inhibit the isoprenylation of small G proteins. Such inhibitions could alter signal transduction and result in altered gene expression.

The results of a new gene expression screen-subtractive display-have identified or confirmed several up- or downregulated genes in regressing mammary carcinomas. For example, these regressing tumors overexpress the mannose 6-phosphate/IGF II receptor. The product of the gene both degrades the mammary tumor mitogen IGF II and activates the cytostatic factor TGF-beta.

These and other alterations in the gene expression of mammary carcinomas lead to a G1 cell cycle block, followed by apoptosis, redifferentiation, and finally complete tumor regression in which tumor parenchyma is replaced by stromal elements. It is likely that monoterpenes prevent mammary cancer during their progression stage by mechanisms similar to those that occur during therapy. In contrast, prevention of mammary cancer by polycyclic hydrocarbons such as 7,12-dimethylbenz[a]anthracene occur by the induction of detoxifying phase II hepatic enzymes.

These references are in PubMed. This may not be the complete list of references from this article.


