

Rimonest

Pomegranate Emulsion

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Rimonest Pomegranate Emulsion is the result of over ten years intensive research on anticancer properties of the pomegranate fruit, begun at the Technion—Israel Institute of Technology in 1999. Initial work proved pomegranate juice, after controlled fermentation, to possess one of the highest **antioxidant** activities ever discovered in nature. This juice extract, but especially polyphenolic compounds in the seed oil, also proved to be potent inhibitors of two key **enzymes** (COX, LOX) responsible for **inflammation**.¹

The work begun in 1999 initially focused on estrogenic activity of the seed oil, previously reported from animal studies in 1964. The 1999 *in vitro* studies confirmed mild estrogenic activity of the seed oil, but more importantly, proved that the juice possessed **anti-estrogenic** action. This finding was particularly relevant since excess estrogenic activity was known to stimulate certain types of breast cancer. Further work showed fermented pomegranate juice extracts (and only weakly so, fresh pomegranate juice extracts) to be potent inhibitors of enzymes (aromatase, 5-HSD-1) catalyzing

estrogen production in the body. Also, fermented pomegranate juice extracts slowed proliferation of both estrogen responsive (ER+) and estrogen non-responsive (ER-) breast cancer cells, and pomegranate seed oil in very small doses decreased **invasion** of breast cancer cells, a model of metastasis, and in larger doses, promoted **apoptosis** (cell self-destruction).²

Angiogenesis, the production of new blood vessels from existing blood vessels, is required by cancers for metastasizing to distant sites in the body. In human breast cancer, pomegranate fermented juice extract (but not fresh pomegranate juice extract) and pomegranate seed oil each potently suppressed angiogenesis at both the cellular and biochemical levels³.

Differentiation is the process whereby cancer cells that have lost their ability to function as normal cells in the body regain normal function. Differentiation represents an attractive means of cancer treatment not relying on direct killing of cells. In human leukemia cells, pomegranate fermented juice extract (and only very

weakly so, fresh pomegranate juice extract) and also pomegranate peel extract proved potent promoters of cancer cell differentiation⁴.

Cancers begin as single cells that are transformed, and these cells multiply to produce clones that become the clinical cancers. The beginning of the cancer is caused by **initiation**, and stimulation of the ongoing development of cancer is called **promotion**. Pomegranate fermented juice extract, pomegranate peel extract and pomegranate seed oil **prevent** cancer initiation and promotion in animal models of breast cancer⁵ and skin cancer⁶.

Oncogenes are genes that when turned on, lead to a cascade of biochemical events that initiate and promote cancer. Pomegranate fermented juice extract and pomegranate seed oil prevented specific oncogenes from being turned on, and also stimulated specific oncogenes to turn off, while reducing cancerous tumor (xenograft) volume in mice by 75%⁷.

Synergy occurs when two or more different medicines combine to produce an effect greater than the sum of their individual effects. When pomegranate fermented juice extract was combined with even a tiny, sub-therapeutic amount of pomegranate seed oil, synergistic suppression of cancer cell proliferation was observed. Synergistic suppression of proliferation also occurred when pomegranate fermented juice extract was combined with a tiny, sub-therapeutic amount of pomegranate peel extract. When equal amounts of pomegranate fermented juice extract, pomegranate peel extract and pomegranate seed oil were combined, the result was an astonishing synergistic suppression of cancer cell invasion and cancer cell inflammation approaching 99% ⁸ (Figure 1). When **pure chemicals** (luteolin, caffeic and punical acids) isolated from pomegranate fermented juice extract, pomegranate peel extract and pomegranate seed oil were combined in equal amounts, a similar, statistically significant suppression of cancer cell invasion occurred⁹.

Inflammation Pomegranate peel extract powerfully inhibits a key enzyme (MMP-1) that leads to leakiness of blood vessels and inflammation¹⁰. Pomegranate fermented juice extract reduces inflammation in individual cancer cells by inhibiting expression of inflammatory protein factor NF-κ-B while also retarding the cancer cells' **motility**¹¹. The reduction of inflammation at the cellular level is a key mechanism in the multiple anticancer effects of pomegranate fractions¹².

Pomegranate fruit, in its peels¹³ and seed oil¹⁴, is rich in **mild estrogens** that “**compete**” with strong estrogens produced by the body to “**selectively modulate**” estrogen receptors in a putatively beneficial manner.

Chronic inflammation is closely related to chronic **insulin resistance** and **metabolic syndrome**, which can lead to cancer, obesity, cardiovascular disease and diabetes. The benefit of pomegranate products for these conditions has been reviewed^{15, 16},

Rimonest Pomegranate Emulsion was first produced in Israel in 2006 for an animal trial at the Comprehensive Cancer Center, University of Michigan, USA. Two groups of 30 female mice each with the **HER2/NEU** genetic defect (all eventually get breast cancer) received either **Rimonest** Pomegranate Emulsion or placebo emulsion. By 40 weeks, 25% of the mice receiving placebo emulsion had developed breast cancer, but mice receiving the **Rimonest** Pomegranate Emulsion were still 100% cancer-free¹⁷. In a larger second trial at Northeastern Ohio University School of Medicine and Pharmacy (USA), rats received a chemical causing **liver cancer** and were then treated daily with either placebo emulsion or Pomegranate Emulsion. The animals receiving Pomegranate Emulsion showed a strong, statistically significant reduction in cancer occurrence¹⁸.

Rimonest Pomegranate Emulsion was approved in December 2008 by the **Israel Ministry of Health** as a safe nutritional supplement for oral use. The recommended dosage is usually 1 teaspoon (5 ml.) one to three times daily, but higher amounts can be safely used.

Rimonest Pomegranate Emulsion is **unsweetened** and contains **no sugar or alcohol**. All pomegranates used in its preparation are grown in Israel under strict **organic** and **kosher** supervision.

Rimonest Pomegranate Emulsion's **potency** derives not from a single compound¹⁹ but from the synergistic interactions inherent in its **complexity**^{20, 21}.

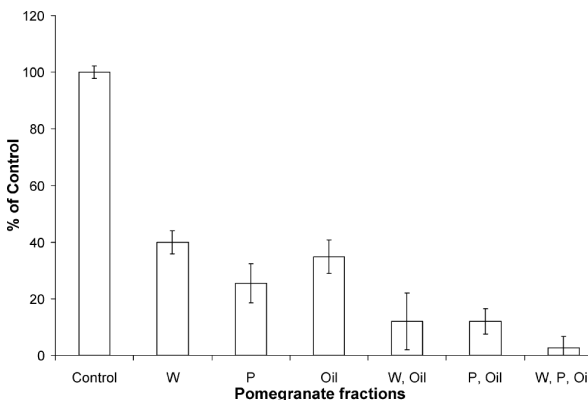


Figure 1. Effects of pomegranate fermented juice extract (W), pomegranate peel extract (P) and pomegranate seed oil (Oil) on invasion of human PC-3 prostate cancer cells *in vitro*. Control received no preventive treatment. The total dose for each of the treated groups was 3 micrograms / milliliter, regardless of whether only one fraction, two fractions or all three fractions (W, P, Oil) were used at one time. Note that when W and Oil or P and Oil were used together, the dose of each was 1.5 mcg / ml, and when all three fractions (W, P and Oil) were used together, the dose of each was only 1 mcg / ml. When all three fractions were used together, the suppression of invasion was about 99%. This illustrates synergistic suppression of invasion when the different pomegranate fractions, originating from “anatomically discrete” parts of the fruit, were combined, to a level of statistical significance of $p < 0.01$. The figure is from reference 8 below.

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