

# A.D.P.<sup>®</sup>

## Sustained Release Emulsified Oil of Oregano A Patented Formula

Proven effective against yeast and parasites, oil of oregano is a powerful plant extract with a strong history in supporting gastrointestinal health.

Biotics Research is widely known for micro-emulsifying fat-soluble nutrients and other lipids for increased nutrient absorption and bioavailability. This technology has been used for oil of oregano, dramatically increasing the effective surface area of the oil. In addition, a sustained release mechanism has been applied to **A.D.P.<sup>®</sup>**, assuring a gradual release throughout the digestive tract. This combined effect of emulsification and sustained release optimizes intestinal exposure to the essential oil.

Long before the advent of refrigeration, the effect of herbs and culinary spices on foodborne organisms was recognized. Similar to rosemary, garlic, ginger, turmeric and other household herbs and spices, oregano has innate properties that could slow food spoilage; natural antimicrobial principles at work. Today, scientists can better explain these specific mechanisms of action.

The principal phenolic compounds in oregano – carvacrol [2-methyl-5-(1-methylethyl)phenol] and thymol (2-isopropyl-5methylphenol) function synergistically with other biologically active monoterpenes of oregano as antagonistic to certain microbes. Both carvacrol and thymol have been shown to be biocidal against Gram-positive and Gram-negative bacteria in the jejunum, ileum and colon.<sup>1,2,3,4</sup> Other studies showed oil of oregano negatively impacting the growth of biofilms produced by pathogenic bacteria.<sup>5-9</sup>



Scientists suggest that the hydrophobic properties of carvacrol and thymol allow them to interact with cell membranes influencing its integrity and leakage. Studies show a direct relationship between amount of oregano extract and amount of biofilm.<sup>10-12</sup>

This powerful plant extract also has robust antioxidant properties. The synergist between carvacrol, thymol and the other terpenes in oregano oil create a high free radical scavenging capacity, supporting cellular membranes, lipids and intracellular components from oxidative stress. Not only does oil of oregano demonstrate potent antioxidant activity, it also supports healthy inflammation pathways by reducing the production of tumor necrosis factor-alpha (TNF-a), interleukin-1B(IL-1B) and IL-6 in LPS-activated THP-1 human macrophage cells. Mice models have shown a reduction in interleukins, prostaglandins and cyclooxygenase-2 (COX-2).<sup>13</sup>

**A.D.P.<sup>®</sup>** not only provides the effective phenolic constituents found in oil of oregano, but these compounds are micro-emulsified and delivered with sustained release technology, earning the status and recognition of a patented formula (#5,955,086).



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## Supplement Facts

Serving Size: 1 Tablet

	Amount Per Serving
Oregano Oil ( <i>Origanum vulgare</i> ) (extract from leaf)	50 mg*

\* Daily Value not established

**Other ingredients:** Cellulose, modified cellulose gum, potassium sorbate, stearic acid (vegetable source), silica, water and gum arabic.

**A.D.P.® supplies oregano oil which is emulsified and processed in a sustained release form for optimal effectiveness. This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.**

**This product is gluten and GMO free**

Patent #5,955,086

**RECOMMENDATION:** One (1) tablet with meals and at bedtime as a dietary supplement or as otherwise directed by a healthcare professional.

**CAUTION:** Not recommended for pregnant or lactating women.

**KEEP OUT OF REACH OF CHILDREN**

Store in a cool, dry area. Sealed with an imprinted safety seal for your protection.

## References

1. Veenstra, J. P., & Johnson, J. J. (2019). Oregano (*Origanum vulgare*) extract for food preservation and improvement in gastrointestinal health. *International journal of nutrition*, 3(4), 43–52. doi:10.14302/issn.23797835.ijn-19-2703
2. Sakkas, H., & Papadopoulou, C. (2017). Antimicrobial Activity of Basil, Oregano, and Thyme Essential Oils. *Journal of Microbiology and Biotechnology*, 27(3), 429–438. doi: 10.4014/jmb.1608.08024
3. Zou, Y., Xiang, Q., Wang, J., Peng, J., & Wei, H. (2016). Oregano Essential Oil Improves Intestinal Morphology and Expression of Tight Junction Proteins Associated with Modulation of Selected Intestinal Bacteria and Immune Status in a Pig Model. *BioMed research international*, 2016, 5436738. doi:10.1155/2016/5436738
4. Braden, B. (2015). The best and worst treatments for *Helicobacter pylori*. *Bmj*. doi: 10.1136/bmj.h4146
5. Lee, J. H., Kim, Y. G., & Lee, J. (2017). Carvacrol-rich oregano oil and thymol-rich thyme red oil inhibit biofilm formation and the virulence of uropathogenic *Escherichia coli*. *Journal of Applied Microbiology*, 123(6), 1420–1428. doi: 10.1111/jam.13602
6. Čabarkapa, et al. (2019). Anti-biofilm activities of essential oils rich in carvacrol and thymol against *Salmonella* Enteritidis. *Biofouling*, 35(3), 361–375. doi: 10.1080/08927014.2019.1610169
7. Lu, M., Dai, T., Murray, C. K., & Wu, M. X. (2018). Bactericidal Property of Oregano Oil Against Multidrug-Resistant Clinical Isolates. *Frontiers in microbiology*, 9, 2329. doi:10.3389/fmicb.2018.02329
8. Wijesundara, N. M., & Rupasinghe, H. (2018). Essential oils from *Origanum vulgare* and *Salvia officinalis* exhibit antibacterial and anti-biofilm activities against *Streptococcus pyogenes*. *Microbial Pathogenesis*, 117, 118–127. doi: 10.1016/j.micpath.2018.02.026
9. Sharifi, A., Ahmadi, A., & Mohammadzadeh, A. (2018). *Streptococcus pneumoniae* quorum sensing and biofilm formation are affected by *Thymus daenensis*, *Satureja hortensis*, and *Origanum vulgare* essential oils. *Acta Microbiologica Et Immunologica Hungarica*, 1–15. doi: 10.1556/030.65.2018.013
10. Čabarkapa, et al. (2019). Anti-biofilm activities of essential oils rich in carvacrol and thymol against *Salmonella* Enteritidis. *Biofouling*, 35(3), 361–375. doi: 10.1080/08927014.2019.1610169
11. Marchese, et al. (2018). The natural plant compound carvacrol as an antimicrobial and anti-biofilm agent: mechanisms, synergies and bio-inspired anti-infective materials. *Biofouling*, 34(6), 630–656. doi: 10.1080/08927014.2018.1480756
12. Khan, I., Bahuguna, A., Kumar, P., Bajpai, V. K., & Kang, S. C. (2017). Antimicrobial Potential of Carvacrol against Uropathogenic *Escherichia coli* via Membrane Disruption, Depolarization, and Reactive Oxygen Species Generation. *Frontiers in microbiology*, 8, 2421. doi:10.3389/fmicb.2017.02421
13. Leyva-López, N., Gutiérrez-Grijalva, E. P., Vázquez-Olivo, G., & Heredia, J. B. (2017). Essential Oils of Oregano: Biological Activity beyond Their Antimicrobial Properties. *Molecules* (Basel, Switzerland), 22(6), 989. doi:10.3390/molecules22060989



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