INGREDIENTS
The featured fatty acid in Omega-7 featuring Provinal® is Palmitoleic Acid (POA), an omega-7 monounsaturated fatty acid. Provinal® is isolated from wild anchovies/menhaden from sustainable fisheries. Crude anchovy oil is purified by molecular and high vacuum distillation of the oil in the ethyl ester form and by recrystallization which removes unwanted fatty acids. Provinal™ is a clear liquid in a softgel. Dietary sources of Palmitoleic Acid are animal and vegetable oils including algal oil, macadamia nuts, sea buckthorn and fish. Palmitoleic acid is naturally found in the human body and higher levels of this monounsaturated fat are associated with several indicators of health.1-5

BENEFITS
• Supports healthy heart, blood sugar levels and skin.*
• Improves markers of blood lipids and helps maintain healthy triglycerides.*
• Lowers levels of circulating blood glucose and improves insulin sensitivity.*
• Slows aging of mature skin by hydrating skin, increasing its softness and elasticity that may help to decrease deep wrinkles.*

Omega-7 promotes healthy endothelial function
There are approximately 60,000 miles of blood vessels in an adult human body. This vast network of arteries, veins, and capillaries is maintained and protected by an inner sheath of microscopic cells called “endothelial” cells. These many hundreds of thousands of cells, together comprising the “endothelium,” form the inner lining of blood vessels and lymph vessels, forming a thin layer between the vessel walls and the flowing blood, and serving as an interface between the blood and the rest or our body. The endothelium allows for the proper blood flow to the entire body. Inadequate support of the endothelium can lead to endothelial dysfunction. Endothelial dysfunction is an indicator of atherosclerosis and is also an early sign of vascular disease. Endothelial dysfunction is caused by several factors, including hyperglycemia (elevated blood glucose), dyslipidemia (abnormal blood lipid levels) and general inflammation.6

Omega-7 combats hyperglycemia: Omega-7 has been shown to combat hyperglycemia by increasing insulin sensitivity and glucose uptake, and reducing insulin resistance thus lowering blood glucose levels.1-3,7-11 Omega-7 has been shown to attenuate dyslipidemia through multiple mechanisms, such as lowering circulating triglycerides, total cholesterol and LDL.7,8,9,12-14

Omega-7 protects against aging of skin: Omega-7 has been shown to down-regulate inflammatory cytokines7,14,15 and provide key building blocks for hair, skin and nails. It helps combat wrinkles, dryness, lost elasticity of skin and other symptoms of malnourished or aging skin. It helps skin function by supporting skin functions including:16,17

• Boosting collagen production*
• Protecting against oxidative damage*
• Restoring youthful resilience and plumpness to aging skin cells*
• Rejuvenating skin cell membranes*
• Enhancing the skin’s ability to retain moisture*
• Repairing sun-damaged skin*
• Protecting against sun damage, toxins, and environmental stress*

Other health benefits of Omega-7: Omega-7 also may help body weight management. Omega-7 does this by increasing satiety and appetite-regulating hormones and lowering rates of de novo lipogenesis (the creation of fat from carbohydrates).18-21 Through its multiple healthful mechanisms of action, Omega-7 featuring Provinal™ is able to provide a comprehensive defense against endothelial dysfunction.*

CLINICAL STUDIES
Heart: In a randomized, controlled trial on the supplementation of Palmitoleic Acid, adults with dyslipidemia and mild systemic inflammation were
supplemented with purified palmitoleic acid or a placebo for thirty days. Compared to the control, the supplemented group saw a 44% reduction in C-reactive protein (a marker of inflammation), a 15% decrease in serum triglycerides, an 8% reduction in LDL and a 5% increase in HDL. This trial provided strong evidence for Palmitoleic Acid’s use as a comprehensive aid in improving markers of endothelial function. In an analysis study attempting to determine how serum fatty acid levels related to endothelial function, palmitoleic acid was determined to be a significant independent predictor of endothelial function.

Blood sugar control: A different animal study aimed at assessing the effects of palmitoleic acid, examined its effect on lipogenesis and circulating insulin levels. These results demonstrated that supplemental Palmitoleic Acid reduced weight gain, intramuscular adipocyte size and total lipid content, and circulating insulin levels.

Because Palmitoleic Acid is known to prevent insulin resistance in mice, researchers attempted to determine whether palmitoleic acid predicts insulin sensitivity in humans. In this study, circulating palmitoleic acid levels positively correlated with insulin sensitivity, independent of age, sex and body fat levels. The researchers determined that circulating palmitoleic acid levels strongly and independently predict insulin sensitivity, suggesting that it plays an important role in the pathophysiology of insulin sensitivity in humans. Later a study was done attempting to determine a relationship between Palmitoleic Acid and certain health markers. This study found that circulating Palmitoleic Acid is associated with lower triglycerides, fasting insulin, blood pressure and incident diabetes in the subjects of this study.

A study was conducted to determine whether supplemental palmitoleic acid was independently related to lower metabolic risk and incident type 2 diabetes. The researchers of this study found higher levels of supplemental Palmitoleic Acid was associated with slightly lower body fat levels and higher HDL, lower triglycerides, lower total to HDL cholesterol ratios, lower C-reactive protein levels and lower rates of insulin resistance. Supplemental Palmitoleic Acid was also shown to have a relationship with substantially lower incidence of diabetes. The researchers concluded that higher serum Palmitoleic Acid levels are associated with lower insulin resistance, atherogenic dyslipidemia (lowered levels of HDL combined with higher levels of LDL and triglycerides) and incident diabetes.

Healthy skin: Palmitoleic Acid contains antioxidants that have been shown to protect skin from oxidative stresses. Palmitoleic Acid has been shown to slow down the aging process of mature skin by hydrating the skin, increasing the softness and elasticity of skin as well as decreasing the amount of deep wrinkles.

Obesity & weight management: An animal study looking at Palmitoleic Acid’s effects on obese and diabetic individuals found that palmitoleic acid supplementation reduced body weight increases, attenuated the development of elevated blood glucose and lipid levels, and improved insulin sensitivity. In addition, hepatic characteristics were significantly affected, as weight of the liver and hepatic triglyceride levels were lower in the palmitoleic acid group when compared to the control groups. Palmitoleic Acid down regulated expressions of proinflammatory adipocytokine genes (TNFα and resistin) in white adipose tissue and lipogenic genes (SREBP-1, FAS, and SCD-1) in liver.
SCIENTIFIC REFERENCES


24. Quirin KW. Specialty fatty oils for healthy skin. 2009 Cosmetic Science Technology

* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.