

## DELPHINOL®

(FORMERLY KNOWN AS MAQUI SELECT)

*THE EXTRACTED ESSENCE OF THE MOST POWERFUL SUPERFRUIT IS NOW AVAILABLE*



Research into Maqui berries by Rafael A. Burgos, DVM, MSc, and Juan Hancke DVM, Ph.D. both of the Department of Pharmacology, Universidad Austral de Chile, have produced remarkable results. Their research has led to the rapid growth of products from raw or concentrated Maqui berries, which is now sweeping the supplement and drink industries. This extract has a patent pending, has a remarkable 2.7 million ORAC antioxidant value and the highest levels of delphininin currently known. Research and animal studies show this non-toxic extract to have remarkable qualities in the following areas:

- boosts the immune system
- helps to healthy inflammatory response
- helps control blood sugar and cholesterol levels
- helps prevent oxidation and related damage



### **THE MOST POWERFUL “SUPERFRUIT” GROWS WILD IN SOUTHERN CHILE**

Blueberries, açai berries, cranberries, goji berries, pomegranate and a number of other types of fruit are popularly known as “superfruits” because of their great nutritional value and high levels of antioxidants which are beneficial to human health.

In southern Chile, a wild fruit grows which boosts the immune system, contains anti-inflammatory properties, is effective to control blood sugar and has higher levels of antioxidants than any other berry fruit: the maqui berry.

### **A HIGH ANTIOXIDANT CAPACITY**

**The Maqui fresh fruit has a much higher antioxidant level than all other superfruits, such as bilberries, black raspberries, goji berries and blackcurrants.**

The oxidation processes in our cells produce free radicals, which are atoms or molecules with an unpaired electron. These free radicals are highly reactive with other substances and therefore damaging to the human organism.

Antioxidants are molecules which can neutralize free radicals, stopping the stress caused by oxidants and slowing down the cell aging process.

The ORAC (Oxygen Radical Absorbance Capacity) index measures the antioxidant and free radical neutralization properties in food. Also, a high ORAC value for a food is often associated with protection against various chronic inflammatory diseases or metabolic disorders.

Maqui fresh fruit has the highest ORAC score among berries known so far.



Nutritionists recommend consuming at least 3,000 ORAC each day. However, most people consume only about 1,200. As a supplement to your diet, Delphinol® can help make up for this deficit, providing health benefits.

**ORAC value of selected “superfruits” (umole TE / 100 gram)**

Source: USDA Database for the Oxygen Radical Absorbance Capacity (ORAC), May 2010

“Superfruits”	ORAC (umole TE / 100 gram)
<b>**Maqui (<i>Aristotelia chilensis</i>)</b>	<b>28,200</b>
Black raspberry ( <i>Rubus occidentalis</i> )	19,220
Black chokeberry ( <i>Aronia melanocarpa</i> )	16,020
Elderberry ( <i>Sambucus nigra</i> )	14,697
Cranberry ( <i>Vaccinium oxycoccos</i> )	9,090
Blackcurrant ( <i>Ribes nigrum</i> )	7,957
Blueberry ( <i>Vaccinium angustifolium</i> )	4,669
Açai ( <i>Euterpe oleracea</i> )	4,000
Goji Berry ( <i>Lycium barbarum</i> )	3,290

**\*\* Source: Brunswick Laboratories, Norton, MA, USA**

**DELPHINOL® IS AN INNOVATIVE EXTRACT**

**FROM ANCIENT KNOWLEDGE TO SCIENTIFIC PROOF**

Maqui’s therapeutic qualities have been known for centuries to the Mapuches, indigenous people, who have traditionally lived in the southern part of Chile. Besides eating the fruit, they also consumed fresh and fermented maqui juice. They used it to treat stomach ailments, sore throats or wounds, and also as an analgesic and fever reducer. They also used it as a natural colorant.

The research team at Universidad Austral de Chile, one of the partners developing Delphinol®, is conducting ongoing research that started three years ago. Their findings have proven the exceptional properties of maqui, revealing their chemical origin and identifying other properties which were not known to the Mapuches.

Delphinol® extract is obtained from the wild maqui fruit, gathered in southern Chile. It has a standardized content of anthocyanin (35.4%) and an astonishing level of delphinidins (28.6%), the highest among all food

ingredients which are currently available.

**Anthocyanin content in Delphinol®**

**A xample of Pilot production at indena**

Source: Indena SpA, Italy

Anhocyanin	Content
Delpinidin-3-O-samb 5-O-gluc	6.38
Delphinidin 3,5-O-diglucos	13.64
Cyanidin-3-O-samb-5-O-gluc	3.36
Cyanidin-3,5-O-diglucos	1.58
Delphinidn-3-O-sambubloside	1.67
Delphinidin-3-O-glucoside	6.95
Cyanidin-3-O-sambubloside	0.79
Cyanidin-3-O-glucoside	1.05
<b>TOTAL DELPHINIDINS</b>	<b>25.64% of NLT</b>
<b>TOTAL ANTHOCYANINS</b>	<b>35.40% of NLT</b>

**Delphinidin content in selected extracts**

Source: Technical Specification of each manufacturer

Superberry	Mg of Delphinidin /g extract
Delphinol	250
Top Blackcurrant	140

**Delphinol® has a potent antioxidant against the five most important radicals:** Peroxyls, hydroxyls, peroxy nitrates, superoxide anions and other oxygen-based free radicals.

Its exceptional properties make Delphinol® is one of the best anti-aging products:

- **boosts the immune system**
- **helps to healthy inflammatory response**
- **helps control blood sugar and cholesterol levels**
- **helps prevent oxidation and related damage**

## Anti-oxidant capacity of Delphinol against 5 radicals

Source: Brunswick Laboratories, 2010

Radical	Valor (umole TE / 100 gram)
Peroxyl	461,100
Hydroxy	14,372
Peroxynitrite	835
Super oxide anion	5,699
Singlet oxygen	1,245
<b>TOTAL ORAN FN</b>	<b>26,762</b>

### **DELPHINOL® PROMOTES A HEALTHY IMMUNE RESPONSE**

**Delphinol® extract has the highest delphinidin content among similar products on the market. The research team in Chile made this important discovery on the ability of delphinidins present in Delphinol® have an excellent ability to stimulate the immune system.**

Delphinidins are a type of anthocyanin, a vegetable pigment responsible for the blue and red colors of certain kinds of grapes, blueberries and pomegranates. In general, delphinidins activate the production of nitric oxide, stimulating vascular relaxation and reducing blood pressure.

Furthermore, research carried out by Maqui New Life has demonstrated that delphinidins elevate the liberation of intracellular calcium in Jurkat cells, which may activate the production of cytokines such as IL-2 and IFN-gamma in this cellular line and in human T lymphocytes.

Since cytokine production in T lymphocytes is activated through the NFAT transcription factor, and production of IL-2, induced by the delphinidins, is significantly reduced by the cyclosporin A (CsA) calcineurin inhibitor, it is evident that delphinidins have the ability to activate NFAT transcription factor.

All of these effects result in strengthening the cells of the immune system.

### **PROMOTES HEALTHY INFLAMMATORY RESPONSE**

**Delphinol® can help to control inflammatory processes, it is useful as a complement in the treatment of diseases characterized by such processes.**

Chronic inflammatory processes cause many human health problems related to the destruction of tissue and tumor formation. Delphinol® can help prevent these problems.

The potential effect of Delphinol® as an anti-inflammatory was assessed on animal models with plantar inflammation induced by carrageenan showing a reduction in inflammation similar to the effect of the

prescription drug diclofenac.

Delphinol® gets this biological effect from delphinidins, which have shown anti-inflammatory effects in many experimental models.

Preliminary studies have shown that Delphinol®, due to its high concentration of delphinidins, can inhibit the NF-κB transcription factor in neutrophils and activate the PPAR receptor. This receptor, in addition to carrying out anti-inflammatory activities, is associated with the control of various biological processes.

In general, anthocians, do posses a PPar gamma effect. Our research on delphinidins, (highly concentrated in the maqui and Delphinol), are unique in its type, since they show a strong immunostimulant effect. We are elucidating the molecular mechanism of action and the specific pharmacological target of Delphinol®.

The delphinidins in Delphinol® have also shown a significant antiproliferative effect.

## HELPS MAINTAIN GLUCOSE BALANCE

**Delphinol® extract stabilizes blood glucose levels, helping to control metabolic balance.**

As mentioned previously, the delphinidins of Delphinol® have powerful anti-inflammatory effects, due to their activation of the PPAR receptor. This activation mechanism is strongly correlated with the control of Type 2 diabetes as it enhances insulin sensitivity.

Also, since hyperglycemic episodes in diabetic patients are closely linked to nitro-oxidative or oxidative stress -- the most important factor in the onset and progress of vascular and kidney complications from Type 1 and Type 2 diabetes-- the potent effect of Delphinol® may help prevent the pro-oxidant effects of hyperglycemia.

In conclusion, studies show that the delphinidins of Delphinol® significantly increase the expression of adipocytokine genes, PPAR and specific adipocyte genes in humans and can be an excellent complement in regulating the adipocyte function, reducing body weight and controlling metabolic problems related to overweight and obesity.

## DELPHINOL IS A STANDARDIZED EXTRACT, MANUFACTURED BY THE GLOBAL LEADER IN BOTANICAL DERIVATIVES

### GUARANTEED QUALITY

Unlike many similar products, Delphinol® is a standardized extract.

To achieve this level of standardization, Indena invested in research to develop a new manufacturing method which is appropriate for processing Maqui berries.

All of Indena's production processes are done according to Good Manufacturing Practices (GMP). Delphinol® is manufactured as a food grade, meeting the standards of the U.S. Food and Drug Administration (FDA).

### PRE-CLINICAL STUDIES AND TOXICOLOGY



Delphinol® has been subject to pre-clinical trials carried out by Drs. Juan L. Hancke and Rafael Burgos and collaborators at the Institute of Pharmacology and Morphophysiology at Universidad Austral de Chile, in the city of Valdivia. In these trials, the extract was shown to have anti-aging characteristics, including antioxidant, immune--boosting, anti-inflammatory and glycemic control characteristics.

To ensure that Delphinol® is innocuous, a number of toxicological trials were carried out on a group of Sprague-Dawley rats. Over a period of 60 days, the rats were given a dose of maqui extract in drinking water in concentrations of 1x, 10x and 50x. The experiments showed that the maqui extract did not cause any hematological or biochemical harm or weight changes.

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*\*The statements contained in this article have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.*

