



**BERGAMONTE®**  
Cholesterol, Glucose Balance, Weight Management



## The History of Bergamot ...

Bergamot (*Citrus Bergamia Risso*) is a citrus plant that grows almost exclusively in the narrow coastal Calabria region in Southern Italy, due to sensitivity to the weather and soil conditions. Bergamot juice was traditionally recognized by the local population as a remedy for supporting healthy cholesterol level and cardiovascular health. The medicinal use of bergamot, forgotten for decades, is now being rediscovered.

The juice and albedo of bergamot has a unique profile of flavonoid and glycosides, such as neohesperidin, naringin, rutin, neodesmin, rhoifolin and poncirin. Naringin have been shown to be beneficial in animal models of atherosclerosis, while neoericiotin and rutin have been found to exhibit a strong capacity to prevent LDL from oxidation. Importantly, bergamot juice is rich in brutieridine and melitidine with an ability to inhibit HMG-CoA reductase.

## Patented, Standardized, Clinically Tested ...

Bergamonte® contains bioactive compounds of extract of the juice and albedo of citrus bergamia risso, standardized to >30% polyphenolic flavanoids consisting of Naringin, Neohesperidin, Neoericiotin, 1% Melitidine, and 2% Brutieridine. Bergamonte® is produced using patented extraction technology through collaborative works of various Universities and research institutions in Italy.

These flavanoids are clinically proven to help maintain healthy cholesterol level†, healthy blood glucose level, increase HDL-cholesterol, and promoting healthy weight management. (US Patent: 20110223271)

## Benefits of Bergamonte® ...

- **Cardiovascular Health**
- **Supports Healthy Cholesterol†**
- **Supports Healthy Blood Sugar**
- **Healthy Weight Loss**

## Citrus Bergamot Differs From C. Aurantium...

Citrus Bergamot differs from C. Aurantium as Citrus Bergamot does not contain Synepherine, N-methyltyramine, and octopamine, which have been shown in research to constrict arteries, increase blood pressure, increase heart rate, cause heart-rhythm disorders, heart attack, and stroke.

Citrus Bergamot contains Melitidine and Brutieridine which is absent in C. Aurantium. Research has shown that these compounds significantly supports healthy total cholesterol†, LDL, Triglycerides†, blood glucose levels, while increasing HDL.

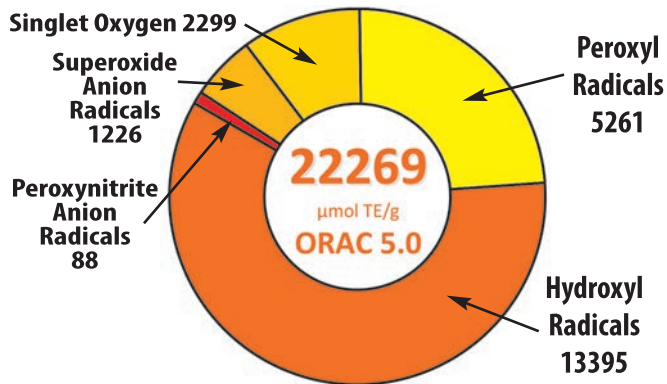
## Melitidine and Brutieridine In Bergamonte® ...

A published research article in the Journal of Natural Products 2009 showed that bergamot juice contained novel compounds with statin like principles, having the 3-hydroxy3-methylglutaric acid (HMG) found to the naringin (melitidine) and neohesperidin (brutieridine).

These novel compounds interfere with the natural synthesis of the cholesterol pathway in the human body: The HMG-CoA substrate interferes with the synthesis of the mevalonate acid, blocking the cholesterol production.

† Already within the normal range

## Superior Full-Spectrum Antioxidant ORAC Potency



## Mode of Action ...

### Inhibiting HMG-CoA Reductase

In a research published in Journal of Natural Product July 2009, brutieridine and melitidine have been suggested to act as direct HMGCoA reductase inhibitors. HMG-CoA reductase is an enzyme linked to the liver's cholesterol production. Melitidine and Brutieridine inhibit the liver's ability to produce LDL, resulting in reduced cholesterol levels in liver cells, which then meet their cholesterol requirements by taking up cholesterol circulating in the blood, via LDL receptor. LDL receptors break down the circulating cholesterol, which results in healthy levels of LDL cholesterol in the bloodstream.

### Inhibiting Phosphodiesterases PDEs

Bergamot flavonoids mediate their beneficial effects on lipid and glucose homeostasis by PDE4 and PDE3B modulation. PDE4 plays a critical role in cAMP (cyclic adenosine monophosphate) which regulates energy metabolism, AMPK, Triglycerides hydrolysis, and glucose metabolism. PDE3B is crucial for triglyceride and cholesterol metabolism, and glucose homeostasis. Dysregulation of PDE3B can cause development of fatty liver, common in metabolic syndrome and type-2 diabetes patients.

### Activating AMPK

Flavanoids in Bergamonte® activate AMPK and stimulates glucose uptake. AMPK plays a central role in regulating healthy glucose and lipid metabolism and energy production. AMPK activation can prevent abdominal fat accumulation, regulate glucose tolerance, normalized liver markers, reduced oxidative stress and inflammation in the liver and heart. Bergamot flavonoids activates the glucose transporter GLUT1 in all cells and upregulation and translocation GLUT4 to the cell membrane in muscle cells.

## Efficacy Findings from Clinical Trials for Bergamonte® ...

In an unpublished human clinical trial involving 192 patients, the following are the result after patients consumed 100ml of Citrus Bergamot juice for 30 days.

### Bergamont Juice (100 ml/day)

Total Cholesterol	HDL Cholesterol	LDL Cholesterol	Triglycerides	Blood Glucose
-35.72%	+56.05%	-41.95%	-38.31%	-22%



## Hypolipemic and Hypoglycemic Activity of Bergamot Polyphenols

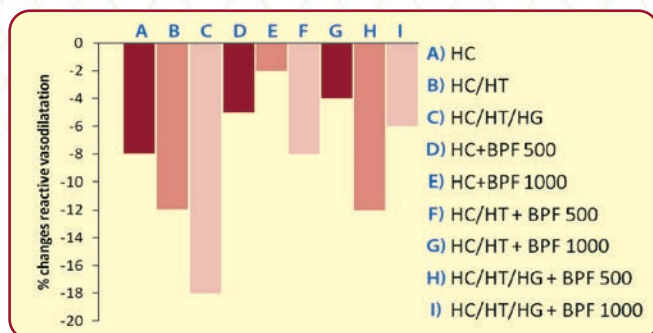
Fitoterapia 82 (Nov 2011) 309–316

237 patients with hyperlipemia, hypercholesterolemic (HC, cLDL, low cHDL), mixed dyslipidemic (HC and TG), or metabolic syndrome (HC, HT, and HG) were taking either placebo, 500mg, 1000mg.

	Total-Chol	HDL-C	LDL-C	Triglycerides	Blood Glucose
<b>Placebo</b>	0.14%	+1.2%	-1.1%	+0.1%	+0.5%
<b>Bergamonte (500mg/Day)</b>	-20.69%	+22.9%	-24.1%	-29.9%	-18.8%
<b>Bergamonte (1000mg/Day)</b>	-26.53%	+40.1%	-36.00%	-38.8%	-22.3%

The effect of Bergamonte® (500 and 1000 mg/daily) on reactive vasodilatation in patients suffering from isolated (HC) or mixed hyperlipidemia (HC/HT) and associated hyperglycemia (HC/HT/HG).

Bergamonte® helps support healthy total and LDL cholesterol levels (an effect accompanied by elevation of cHDL), triglyceride levels† and support healthy blood glucose. Moreover, Bergamonte® inhibited HMG-CoA reductase activity and enhances reactive vasodilatation.



## Bergamonte® supports healthy cholesterol level†, increases LOX-1 expression and Protein Kinase B phosphorylation

International Journal of Cardiology, 2013

In this open-label, parallel group, placebo-controlled study, 77 patients were randomly assigned either placebo, Rosuvastatin, Bergamonte® or combination of Bergamonte® with Rosuvastatin for 30 days.

	Total-Chol	LDL-Chol	HDL-Chol	Triglycerides
<b>Basal</b>	278 ± 4	191 ± 3	38 ± 2	238 ± 5
<b>Placebo</b> (n=15)	275 ± 4	190 ± 2	38 ± 3	235 ± 5
<b>Rosu</b> 10mg/day (n=16)	195 ± 3*	115 ± 4*	42 ± 3*	200 ± 4*
<b>Rosu</b> 20mg/day (n=16)	174 ± 4*	87 ± 3*	48 ± 3*	202 ± 5*
<b>Bergamonte®</b> 1g/day (n=15)	191 ± 5*	113 ± 4*	45 ± 4*	165 ± 3*
<b>Rosu</b> 10mg + 1g <b>Bergamonte®</b> (n=15)	172 ± 3*	90 ± 4*	52 ± 4*	152 ± 5*



Both doses of rosuvastatin and Bergamonte® help support healthy cholesterol level† and reduce urinary mevalonate compared to control group. The benefits are associated with significant reductions of biomarkers used for detecting oxidative vascular damage, including malondialdehyde, oxylDL receptor LOX-1 and phosphoPKB. These suggest a multi mode of actions of Bergamonte®.

## Bergamonte® Effects on LDL Small Dense Particles, Metabolic Biomarkers, and Liver Function

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107 patients with metabolic syndrome and non fatty liver disease were given either placebo or 650 mg of Bergamonte® twice a day for 120 days. Bergamonte® group showed significant reduction in fasting plasma glucose, total cholesterol, LDL cholesterol, triglycerides, and increase of HDL cholesterol. Bergamonte® decrease IDL particles by 51%, increase large LDL by 38%, decrease small LDL by 35%, and 20% increase of total HDL particles. Hepatorenal index was significantly reduced by 46%, accompanied by reduction of hepatic ultrasonographic pattern of steatosis by 99%. This suggests Bergamonte® improves both liver function and inflammation as confirmed by reduction of TNF-α and CRP.

	Baseline	Bergamonte®	% Change
<b>BMI</b> (kg/m <sup>2</sup> )	29.4 ± 2.01	28.2 ± 1.53	-4.0%
<b>Fasting OPlasma Glucose</b> (mg/mL)	118 ± 1.4	98 ± 0.8*	-16.9%
<b>Total Cholesterol</b> (mg/dL)	245 ± 8.3	182 ± 7.1*	-25.7%
<b>LDL-C</b> (mg/mL)	162 ± 4.3	101 ± 1.8*	-37.7%
<b>HDL-C</b> (mg/mL)	38 ± 3.8	49 ± 4*	+28.9%
<b>Triglycerides</b> (mg/mL)	232 ± 5.1	160 ± 4.8*	-31.0%
<b>Steato Test</b>	0.74 ± 0.12	0.44 ± 0.09*	-99.4%
<b>ALT</b> (U/L)	54 ± 5.4	36 ± 5.3*	-33.3%
<b>AST</b> (U/L)	52. ± 6.4	41 ± 5.2*	-21.2%
<b>γ-GT</b> (IU/L)	38 ± 5.2	29.33 ± 1.1*	-22.8%
<b>Hs-CRP</b> (mcg/dl)	1.2 ± 0.8	0.94 ± 0.6*	-21.6%
<b>TNF-α</b> (pg/mL)	14.4 ± 1.9	10.7 ± 1.7*	-25.7%
<b>Hepatorenal Index</b>	2.8 ± 0.4	1.5 ± 0.5*	-46.4%

## Product Comparison ...

	Total-Chol	LDL-Chol	Triglycerides	HDL-Chol	Blood Glucose
<b>Bergamonte®</b>	<b>12%-48%</b>	<b>20%-59%</b>	<b>30%-55%</b>	<b>7%-83%</b>	<b>15%-30%</b>
<b>Policosanol</b>	<b>15%-29%</b>	<b>17%-21%</b>	<b>7-12%</b>	<b>8-15%</b>	<b>unknown</b>
<b>Citrus PMF with Tocotrienol</b>	<b>20%-30%</b>	<b>19%-27%</b>	<b>24-34%</b>	<b>0%</b>	<b>0%</b>
<b>Citrus PMF</b>	<b>12%-18%</b>	<b>12%-16%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>
<b>Phytosterols</b>	<b>15%</b>	<b>9%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>

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## For More Bergamonte® Information ...

Contact HP Ingredients to learn more about our extensive published clinical research for our Bergamonte®

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