MicroActive® CoQ10 for Sports Nutrition

Developed by BioActives LLC
Distributed by Maypro Industries
CoQ10 Benefits For Exercise
Energy Cycle Essential • Powerful Antioxidant

- Improved perceived performance and recovery time along with higher blood oxygen levels.
- Increased endurance and time to exhaustion for trained and untrained athletes.
- Demonstrated more than a 2.5% increase in power as compared to placebo.
- Reduced exercise induced adverse consequences such as inflammation after 3,000 meter training.
- Reduced exercise induced muscle injury in kendo athletes.
- Reduced perception of fatigue during bicycling and other intense exercises.
- Prevented plasma oxidation damage in participants playing a football match.
MicroActive® CoQ10
Assuring The Right Dose

- Studies support a daily 300 mg dose over at least three weeks for best performance
- Poor CoQ10 absorption may be the reason for inconclusive results found by some studies
- Absorption may vary from person-to-person or decease as dosing increases
- MicroActive CoQ10 sustained-release doubled CoQ10 levels in three weeks for 100% of the subjects
How MicroActive® CoQ10 Works

- **Micronized Particles**: Complexing with cyclodextrin reduces particle size and is therefore more easily absorbed by cells in the small intestine.
- **Water Dispersible**: Cyclodextrins render CoQ10 water dispersible so it is easily transported through the small intestine regardless of fat/oil content.
- **Extended Release**: Helps reduce absorbance differences between subjects by allowing time for physiological and dietary variations.
- **Slightly Stimulates Intestinal Cell Walls**: Cyclodextrin are an active carrier slightly stimulating the cell wall to facilitate absorption.
Results of Human Studies
Comparing MicroActive® CoQ10 to Advanced Solubilized Product and Crystalline CoQ10

As Published In
Integrative Medicine 2010
Universal Bioavailability
Uptake by Subjects 0-24 hours

- Universal and bioavailable
- Bioavailable not universal
- Marginally bioavailable

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Absorption Performance
MicroActive® to Solubilized Softgel CoQ10

Absorption 24 hr Zero Baseline 60 mg 19 Subjects

Plasma Level CoQ10 (mcg/ml) above baseline

Hour

MicroActive Solubilized

Extended release

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## Absorption Results

<table>
<thead>
<tr>
<th>Comparison:</th>
<th>Conditions</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>MicroActive: Crystalline</td>
<td>24hr 180 mg 8Ss</td>
<td>370% better ($p &lt; 0.008$)</td>
</tr>
<tr>
<td>MicroActive: Solubilized</td>
<td>24 hr 180mg 5Ss</td>
<td>58% better ($p &lt; 0.02$)</td>
</tr>
<tr>
<td>MicroActive: Solubilized</td>
<td>24 hr 60mg 19Ss</td>
<td>270% better ($p &lt; 0.006$)</td>
</tr>
<tr>
<td>MicroActive: Second Solubilized</td>
<td>24 hr 180 mg 8Ss</td>
<td>210% X better ($p &lt; 0.03$)</td>
</tr>
<tr>
<td>MicroActive: Solubilized</td>
<td>3 weeks 60 mg 19Ss</td>
<td>70% better ($p &lt; 0.047$)</td>
</tr>
</tbody>
</table>
## Universal Bioavailability Results

<table>
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<tr>
<th>Comparison:</th>
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<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>MicroActive: Soluble</td>
<td>3 Weeks 60 mg 19 Ss</td>
<td>100% Ss double plasma level over baseline vs. 44% solubilized p &lt; 0.008</td>
</tr>
<tr>
<td>MicroActive: Crystalline</td>
<td>24 hr 180 mg 8Ss</td>
<td>7 MicroActive subjects double plasma level over baseline 0 Crystalline p &lt; 0.01</td>
</tr>
<tr>
<td>MicroActive: Soluble: Crystalline</td>
<td>24 hr 60mg 5 Ss</td>
<td>Number of subjects with AUC above 12mcg/ml.hr MicroActive® 5, softgel 1, crystalline 0 (p &lt; 0.04)</td>
</tr>
<tr>
<td>MicroActive: Soluble</td>
<td>24 hr 180mg 5 Ss</td>
<td>Variance in uptake 4.1x more for solubilized p &lt; 0.003</td>
</tr>
</tbody>
</table>

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MicroActive® CoQ10
Proven Properties

- Significantly more bioavailable than crystalline CoQ10 or advanced “solubilized” products at low and high dosing levels.
- Significantly reduces inter-subject variation in absorption – uniformly absorbed.
- CoQ10 levels doubled over baseline in three weeks for 100% of subjects
MicroActive® CoQ10
Advantages for Sports Nutrition

- Ensures CoQ10 benefits will be delivered
- Reduces dosage for more profitable products
- Can be blended with other powdered ingredients -- stable
- Suitable for food:
  - Stable under heat and \( uv \) light
  - Water dispersible
- Food applications:
  - Energy bars
  - Dairy products
  - Shakes and energy drinks

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Marketing Implications

- A highly bioavailable product that improves performance, reduces injury, and shortens recovery time
- Superior ingredient for serious athletes
- Perfect for growing number of middle-aged and seniors returning to exercise who may be more prone to injury or discourage by fatigue
- May help sustain weight-loss and other health-focused exercise programs
- A perfect center-piece ingredient for a line focused on senior athletes
MicroActive® CoQ10
Product Concepts

- Clinical studies demonstrate that 300 mg of CoQ10 provide strength and anti-fatigue benefits
- Low and high level dosing produced significant increase in CoQ10 serum levels above baseline
- Three week administration of MA CoQ10 double CoQ10 levels over baseline for 100% of the subject
- 150 mg of MA CoQ10 would be a prefect choice for athletes or active people to experience the benefits of CoQ10 in an exercise regimen
Bibliography


Mizun, Kei et.al Anti-fatigue effects of coenzyme Q10 during physical fatigue, Nutrition 24 (2008) 2903-299


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