Coenzyme Q10

Function:

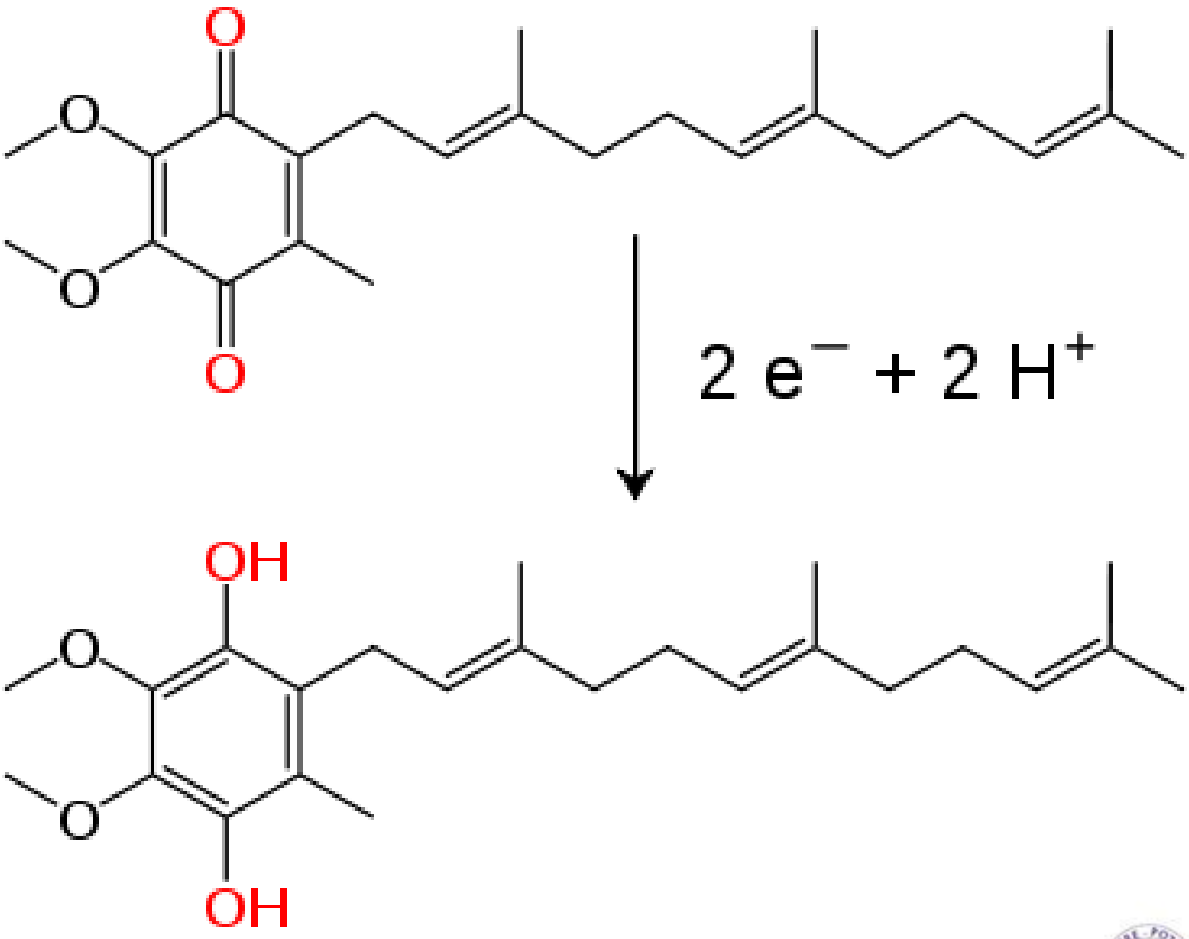
– Required for the production of ATP (chemical energy) by mitochondria and important cellular antioxidant

Primary Clinical Applications:

- Heart disease (angina, cardiomyopathy, congestive heart failure, high blood pressure, etc.)
- Neurodegenerative disease (e.g., Alzheimer's & Parkinson's)
- Prevents statin-induced depletion and cardiotoxicity of chemotherapy drugs
- Boost immune function, anti-aging, periodontal disease, macular degeneration, etc.

CoQ10 Levels in Humans

- Normal blood ranges:
  - 0.7 to 1.0 mcg.ml
  - Approximately 95% is ubiquinol
- Deficiency can be caused by:
  - Decreased dietary intake
    - Normal intake about 5 mg/day
  - Impaired biosynthesis
  - Increased need
    - Aging, CV disease, cancer, diabetes, periodontal disease



What do we know?

- When CoQ10 is given with food it is absorbed twice as fast and at least two-fold greater than on an empty stomach.
- The absorption of CoQ10 may be limited in some individuals.
- When dosages of CoQ10 begin to exceed 300 mg the percentage of CoQ10 absorbed declines.
- Divided dosages (e.g., b.i.d. or t.i.d.) result in higher plasma levels compared to single dosages, especially at higher dosage levels.
- Eventually a steady-state is produced (usually after 3-4 weeks of constant dosing)

Ubiquinol Absorption Study

• Active soft gelatin capsule contained 30 mg of ubiquinol emulsified with diglycerol monooleate, canola oil, soy lecithin, and beeswax. Placebo was without ubiquinol.

• In the 4-week study, subjects received 10 capsules daily, 5 capsules each after breakfast and dinner with 180 ml of water for 28 days. The intakes were 0 + 5 and 0 + 5 for the placebo group, 2 + 3 and 1 + 4 for the ubiquinol 90 mg group, 3 + 2 and 2 + 3 for the ubiquinol 150 mg group, and 5 + 0 and 5 + 0 for the ubiquinol 300 mg group.

Coenzyme Q10 in CHF

Analysis of a “negative” study

Summary: 55 patients with CHF NY class III and IV , ejection fraction less than 40%, and peak oxygen consumption less than <50% during standard therapy were randomly assigned to receive CoQ10 (200 mg) or placebo. There were no changes in ejection fraction, peak oxygen consumption, and exercise duration in either group. The mean serum concentration of coenzyme Q10 increased from 0.95 mcg/ml to 2.2 mcg/ml, but 19 of 22 pts. on CoQ10 had levels below 2.5 mcg/ml and 18/22 were on beta-blockers.

Ann Intern Med 2000;132(8):636-40

Coenzyme Q10 in CHF

Effect of Ubiquinol in unresponsive patients

Summary: Seven patients with plasma CoQ10 levels of 1.6 microg/ml on an average dose of 450 mg of ubiquinone daily (150-600 mg/day) were changed to an average of 580 mg/day of ubiquinol (450-900 mg/day). Mean plasma CoQ10 levels increased from 1.6 mcg/ml up to 6.5 mcg/ml. Mean ejection improved from 22% (10-35%) up to 39% (10-60%) and NYHA class improving from a mean of IV to a mean of II (I to III).

Biofactors. 2008;32(1-4):119-28.

Comparative Absorption

100 mg	Estimated plasma levels in mcg/ml
Ubiquinone powder in hard gelatin capsule	1.25
Ubiquinone in soft gelatin capsule w/rice bran oil	1.8
Ubiquinone solubilized in soft gelatin capsule (Q-Gel)	2.25
Ubiquinone powder nanonized and dispersed in water	2.25
Ubiquinone (BioQ10 SA) in soft or hard gelatin capsule	2.50
Ubiquinol in soft gel capsule	2.50

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Comparative Absorption

300 mg	Estimated plasma levels in mcg/ml
Ubiquinone powder in hard gelatin capsule	2.5
Ubiquinone in soft gelatin capsule w/rice bran oil	3.5
Ubiquinone solubilized in soft gelatin capsule	5.0
Ubiquinone powder nanonized and dispersed in water	5.5
Ubiquinone (BioQ10 SA) in soft or hard gelatin capsule	7.0
Ubiquinol in soft gel capsule	7.0

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CoQ10 Dosage Schedule

Target	CoQ10 soft gels	BioQ10 SA	Ubiquinol
Normal blood levels (0.7-1.0 mcg/ml)	50-100 mg	25-50 mg	25-50 mg
Non-brain support (2.5 mcg/ml)	150-200 mg	100-150 mg	100-150 mg
Brain support (3.5 mcg/ml)	300-400 mg	150-200 mg	150-200 mg
Price per 100 mg**	$0.20	$0.40	$0.80

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BioQ10 SA

Why BioQ10 SA is NEW and UNIQUE:

- Achieves high bioavailability without the presence of oil suspensions
- Uses special non-GMO soy peptide to facilitate absorption of CoQ10
- Manufactured using a patented technology
- Better absorbed and more stable than ubiquinol

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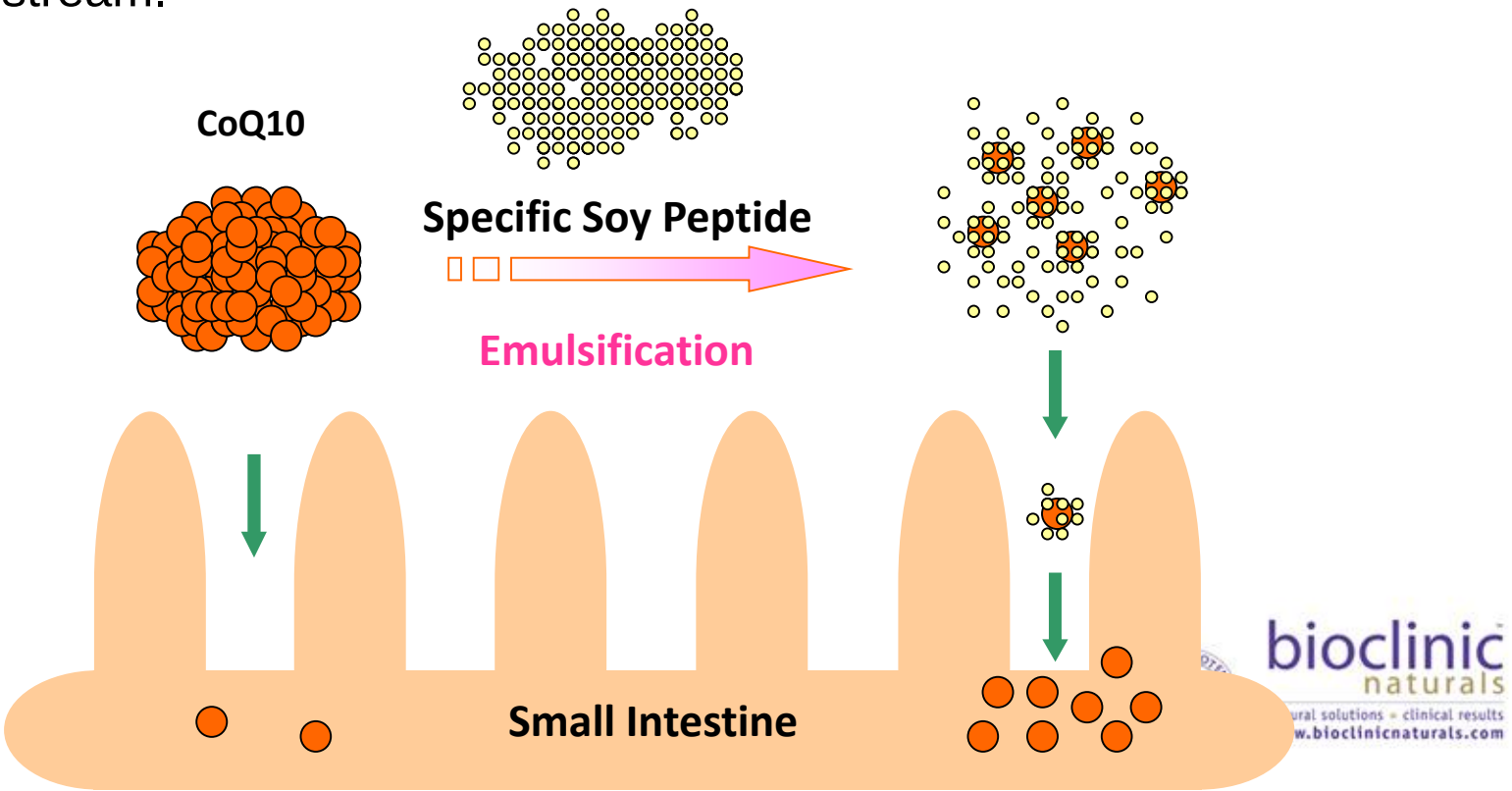
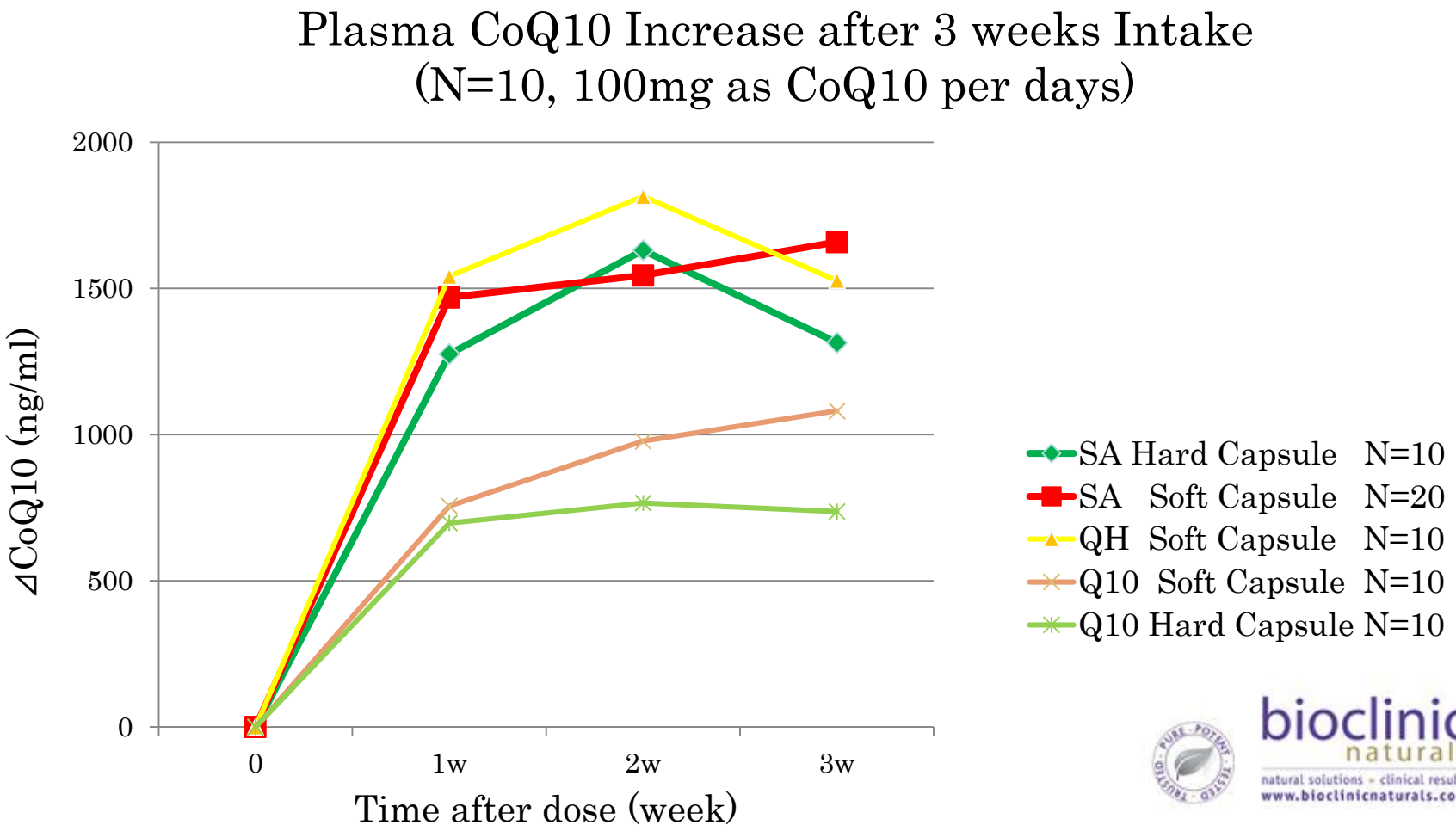
BioQ10 SA™

The Specific Soy Peptide supports the emulsification of CoQ10 and makes it more readily available in the small intestine allowing better absorption into the bloodstream.



BioQ10 SA bioavailability study in humans



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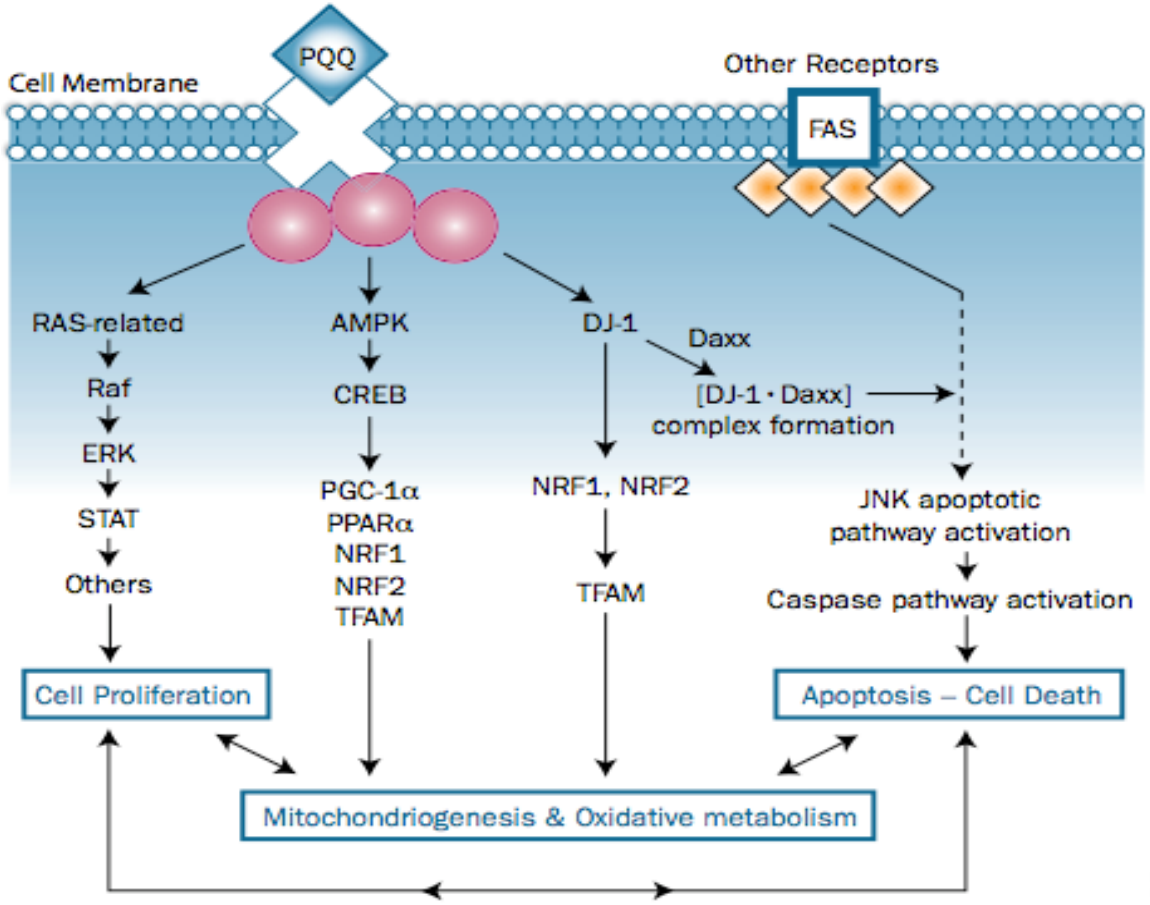
Pyrroloquinoline Quinone (PQQ)

- Vitamin-like cofactor
- Shown to be essential in mammalian nutrition in 1994
- Physiological functions:
  - Vital for mitochondrial function
  - Neuroprotective, promotes NGF
  - Memory restorative in animal and human studies
- Synergistic effect with CoQ10

PQQ and Cell Signaling



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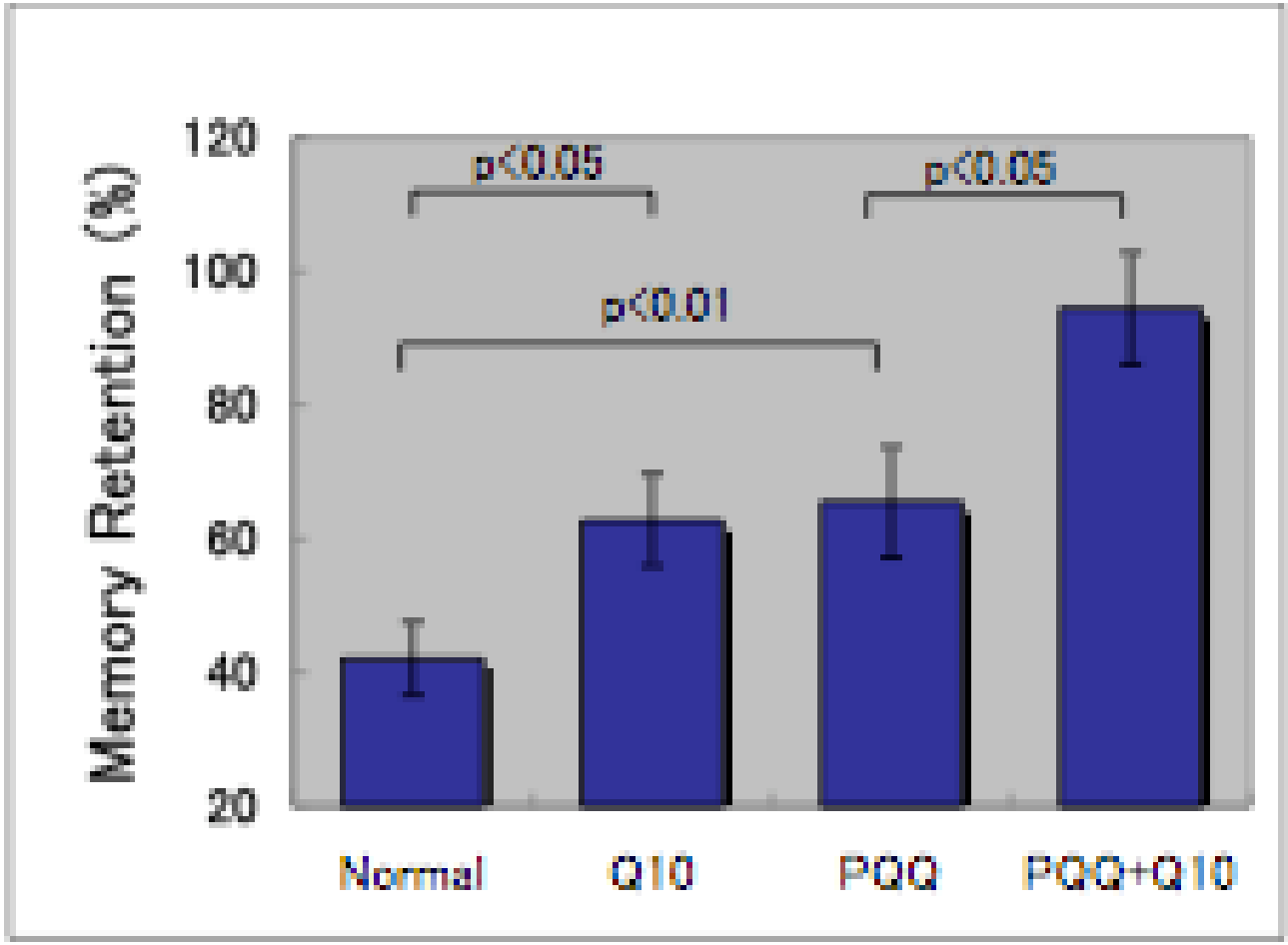
PQQ: an Exceptional Antioxidant

Compound	Potential Number of Catalytic Cycles
PQQ	20,000
Quercetin	800
Catechin	75
Epicatechin	700
Norepinephrine	200
Epinephrine	100
DOPA	20
6-OH-DOPA	20
Ascorbic Acid	4

PQQ and CoQ10 - Animal Data



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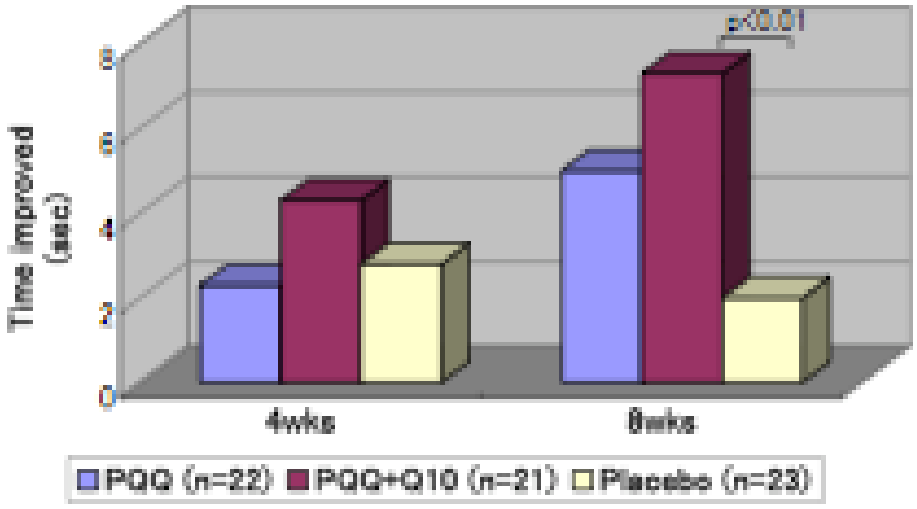
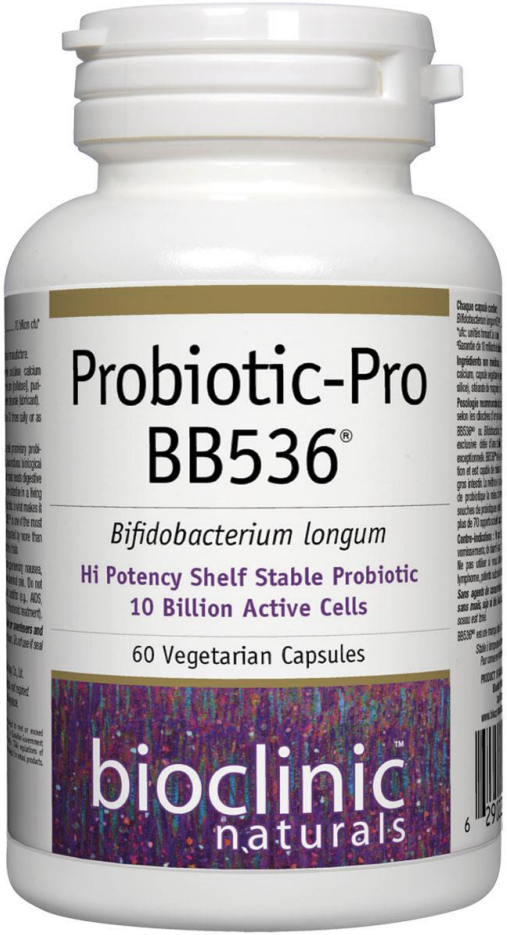
PQQ and CoQ10 - Human Clinical Data



PQQ = 20 mg/day
PQQ + CoQ10 = 20 mg and 300 mg/day
CoQ10 = 300 mg/day

Advantages of BB536



- Documented Strain
- Prolonged Stability
- Confirmed Origin and Species
- Greater Biological Value

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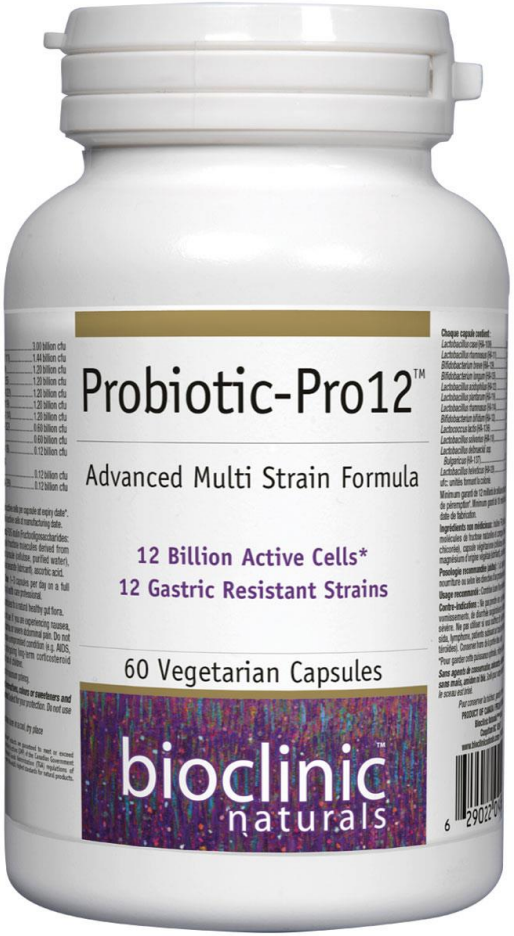
Key Benefits:



– Human or Dairy Origin

– Highly resistant to gastric acid and bile

– Multiple, highly efficacious strains

– ***Verified compatibility***

– Guaranteed potency at expiration date

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Questions and Answers

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