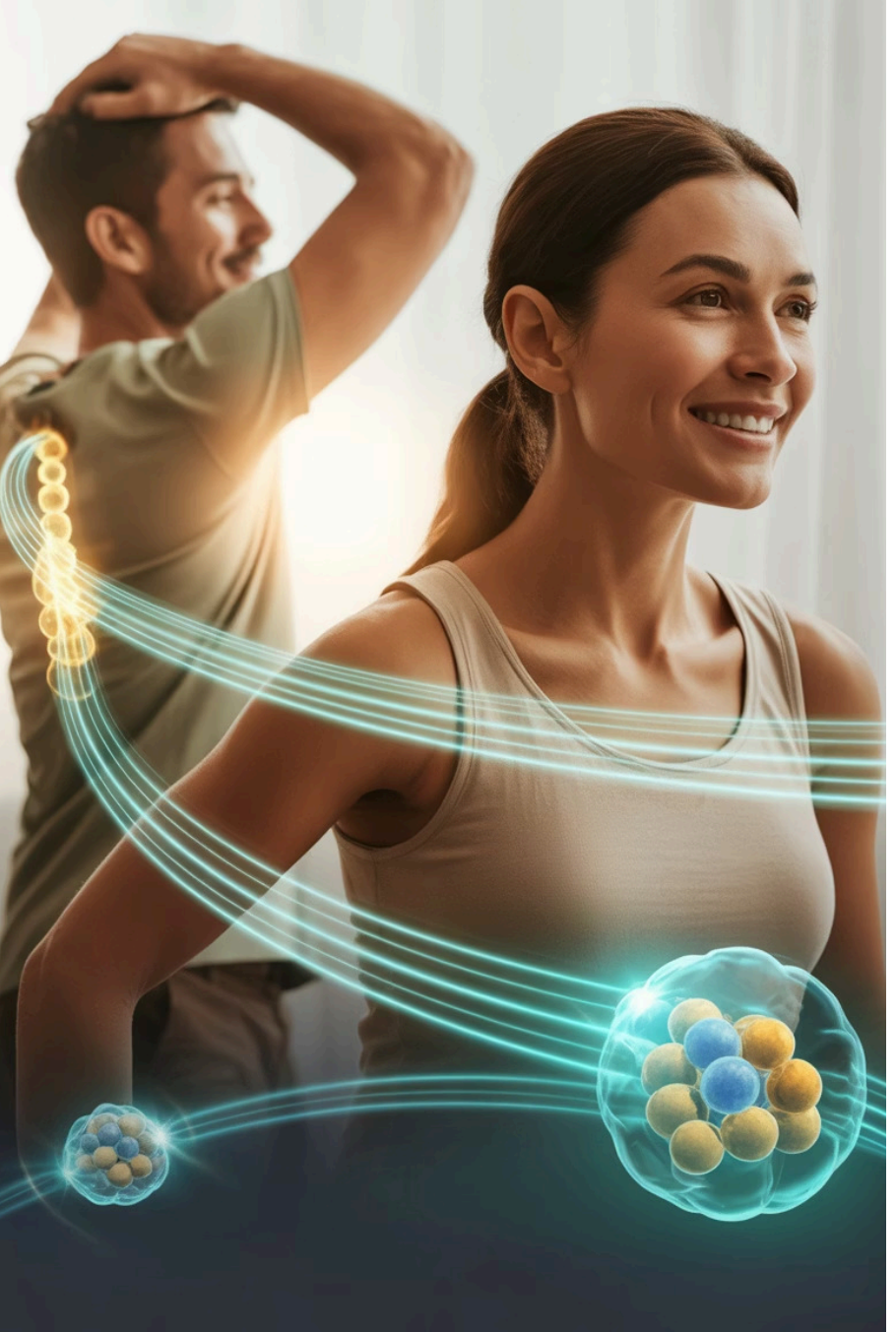


Q-VITALIS™ Phytosome Quantum Nano Sphere Magnesium for Cellular Balance and Energy

Advanced PQNS nanotechnology delivering magnesium directly to cells — enhancing energy, nerve function, and muscle performance.

Crassula®

QuanticSphere™

Magnesium: The Silent Cellular Need

Despite its crucial role in over 300 biochemical reactions, magnesium intake from food remains insufficient for most people.
Deficiency impacts **energy metabolism**, **nerve transmission**, **muscle contraction**, and **bone strength** — leading to chronic fatigue, stress, and loss of cellular efficiency.

Data Highlights

- **Daily dietary intake:** ≈ 400 mg
- **Excretion:** 12 mg via feces, 25 mg via urine
- **Net retention:** ≈ 37 mg/day

> Low magnesium levels silently affect multiple systems in the body:

Neurological

headaches, poor focus, anxiety, insomnia.

Muscular

cramps, spasms, weakness, reduced endurance.

Cardiovascular

arrhythmia, hypertension, low energy output.

Skeletal

bone loss, fragility, impaired calcium metabolism.

Metabolic

insulin resistance, chronic fatigue, poor stress recovery.

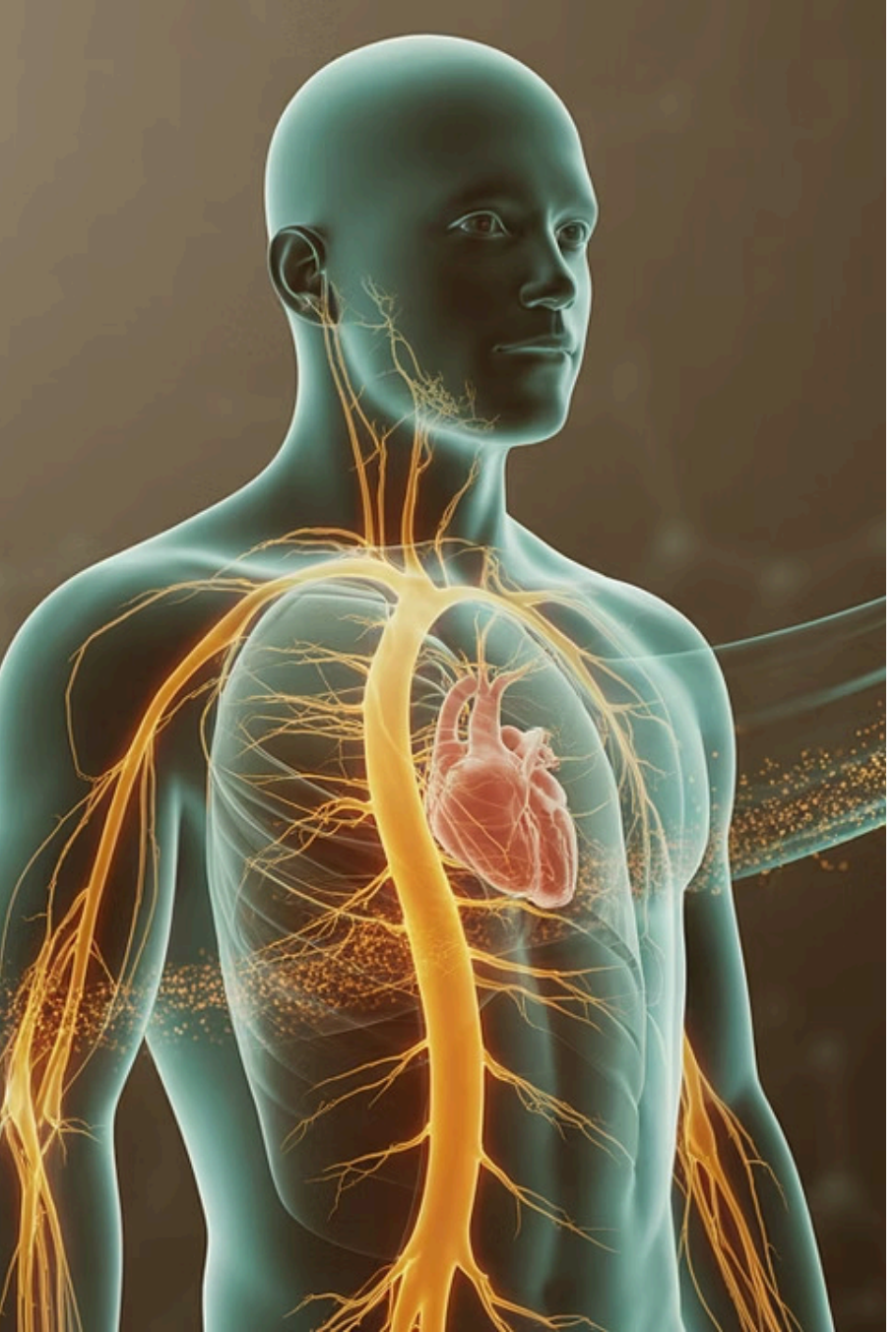
*By restoring intracellular magnesium, **Q-VITALIS™ PQNS** helps rebalance nerve, muscle, and energy function — supporting total metabolic harmony and vitality.*

Why Conventional Magnesium Falls Short

Most magnesium salts exhibit low intestinal absorption and poor stability, requiring higher doses that often cause diarrhea or stomach irritation.

Consequences:

- Low retention at cellular level
- Unstable plasma concentrations
- Poor bioavailability and compliance



Revolution in Mineral Nanotechnology

Q-Vitalis™ applies Phytosome Quantum Nano Sphere (PQNS) nanotechnology to transform magnesium delivery. By encapsulating Mg^{2+} in cationic phospholipid vesicles, absorption increases 2–2.3× over magnesium ascorbate, with dramatically fewer side effects.

Core Advantages:

- Enhanced solubility and membrane transport
- Lower mineral inclusion (25–30% less needed)
- Better tolerance, sustained release
- 2.3× higher cellular retention

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Superior Cellular Uptake with PQNS Magnesium

Study Setup:

Model

Human epithelial Hep2 cells

Doses

200 ppm and 500 ppm

Duration

6 hours at 37 °C, 5 % CO_2

Quantification

Intracellular Mg^{2+} via ICP-MS

Results:

PQNS Magnesium achieved 2–3× higher absorption

compared to regular magnesium ascorbate, with stable intracellular retention and reduced extracellular residue.

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Detailed Study — Cellular Absorption with PQNS Magnesium

Objective

To evaluate the intracellular absorption of different magnesium formulations in human epithelial (Hep2) cells, comparing the PQNS Magnesium (Quantum Nano Sphere) with standard references.

Methodology

- **Model:** Human epithelial cells (Hep2)
- **Doses:** 200 ppm and 500 ppm
- **Duration:** 6 hours at 37 °C, 5 % CO_2
- **Measurement:** Intracellular magnesium quantified by ICP-MS (Inductively Coupled Plasma Mass Spectrometry)

Results

Formulations	PPM	SD	Replicates
Mg Ascorbate (500 PPM)	1.1	0.75	4
Mg Sulphate (500 PPM)	1.2	0.57	4
Mg Ascorbate (200 PPM)	0.5	0.65	4
Mg Sulphate (200 PPM)	0.6	0.71	4
Mg Ascorbate (PQNS 500 PPM)	**3.9**	**1.17**	**4**

Outcome:

> Magnesium QuanticSphere showed approximately **2 to 2.5× higher intracellular absorption** over conventional magnesium ascorbate formulations.

Conclusion

> PQNS nanotechnology enhances the solubility, membrane permeability, and controlled release of magnesium, resulting in superior cellular uptake and reduced gastrointestinal irritation.
> The study validates the **efficacy and safety of PQNS Magnesium** as a next-generation mineral delivery system.

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How PQNS Delivers Magnesium Inside Cells & Maintains Cellular Homeostasis

PQNS (Phytosome Quantum Nano Sphere) technology enables magnesium to be absorbed efficiently through both **intestinal and cellular pathways**, ensuring complete delivery, controlled release, and long-term retention within body tissues.

Mechanism of Absorption

01

Intestinal Uptake

PQNS magnesium begins absorption at the intestinal level through both **transcellular (through epithelial cells)** and **paracellular (between tight junctions)** routes. The nanospheric size and phospholipid composition allow magnesium ions (Mg^{2+}) to cross biological barriers without irritation or degradation.

02

Molecular Transport

PQNS vesicles—composed of **polar and non-polar phospholipid regions**—encapsulate magnesium ions, protecting them from oxidation and gastric acidity. This structure mimics biological membranes, improving compatibility, stability, and tolerance.

03

Cellular Entry & Retention

Once absorbed, magnesium enters cells via **TRPM6 and TRPM7 ion channels**, key regulators of intracellular magnesium homeostasis. PQNS vesicles ensure **controlled intracellular release**, storing magnesium within epithelial and bone cells for sustained metabolic support.

Magnesium Nanominerals Homeostasis

PQNS nanominerals maintain **steady magnesium levels in tissues** while minimizing loss through urinary and fecal excretion. The system reduces the required mineral dose to **1/10th of conventional forms**, while maintaining similar total storage levels (≈ 25,000 mg).

MASS BALANCE Summary:

> PQNS Magnesium demonstrates **2.3× higher cellular retention**, confirming its superior efficiency and stability compared to conventional magnesium salts.

Energy, Focus, and Neuromuscular Vitality

Q-Vitalis™ supports:

- Energy production and mitochondrial metabolism
- Muscle function and relaxation
- Nerve impulse transmission
- Bone mineralization and strength

> "Rebalance your energy — from every cell outward."

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Why PQNS Magnesium Outperforms Standard Forms

Attribute	PQNS Magnesium	Conventional Magnesium
Absorption	2–2.3× higher	Limited
GI Tolerance	Excellent	Variable
Retention	>2.3× cellular	Poor
Dose Required	25–30% lower	High
Release Profile	Controlled	Rapid / irregular

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Q-Vitalis™ — Cellular Harmony through Advanced Science

Magnesium is life's quiet catalyst — and PQNS technology ensures it reaches where it matters most. With 2× absorption, superior tolerance, and nanostructured precision, Q-Vitalis™ represents the future of mineral supplementation.

> "Cellular balance. Neurological vitality. Sustained energy."

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