

# PentaQQ™

PQQ for boosting mitochondrial performance



 **EVONIK**  
POWER TO CREATE

# PentaQQ™ Mitochondrial booster

PQQ is an innovative ingredient that stimulates mitochondrial biogenesis and supports neuroprotective and cardio protective function.

PentaQQ™ is Evonik's brand of pyrrolo-quinoline quinone (PQQ), which is also known as methoxatin. As the body does not synthesize PQQ itself, it must be consumed through diet, for example via fermented soybeans or green peppers. However, the content of PQQ in vegetables is very low.

As a key reduction-oxidation (redox) cofactor in human nutrition, PQQ binds protein within cells and acts as an antioxidant.

PQQ is known for activating several signaling pathways in the mitochondrial biogenesis oxidative metabolism, stimulating cell growth and differentiation.

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#### Benefits of PentaQQ™

- Stable and reliable supply
- GRAS for U.S.
- Highest quality standards
- Non-GMO product

Many international studies suggest that PQQ has a protective effect on different health areas:



**Mitochondria**  
within human cells



**Neurons**  
from oxidative damage



**Heart muscle**  
after ischemic injury

# Formulation examples for PentaQQ™

As experts in nutritional coating systems, we offer standard as well as customized formulations.

Formulations with our EUDRAGUARD® control can provide sustained release starting from 2 hour release up to several hours. The graphic below shows a release example from 540 to 900 min.

With our EUDRAGUARD® formulation toolbox, we can customize the formulation and release profile according to your specific requirements.

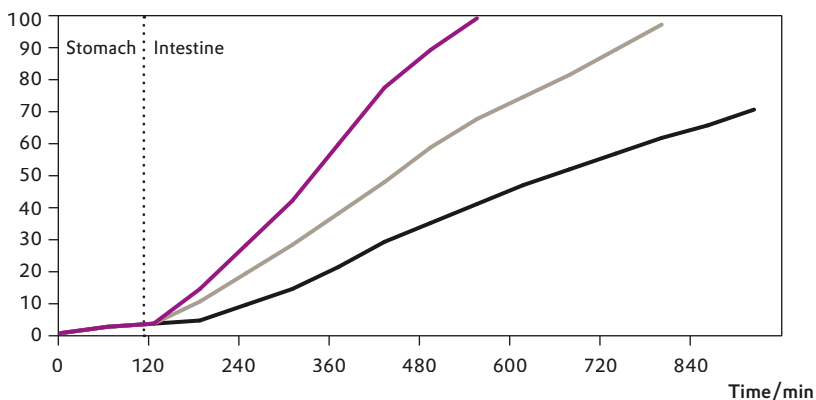
As a powder, PentaQQ™ can be formulated to different delivery forms:

- HPMC capsules
- Direct compressed tablets
- Granules and pellets

► We can support you, in customizing your formulation.

## EUDRAGUARD® control formulation options

Released PentaQQ™/%



POLYMER WEIGHT GAIN: — 3.5% — 5% — 6.5%

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