



CoQ10 Forms: Understanding Ubiquinol & Ubiquinone

A Formulation Reference for CoQ10 Ingredient Selection

Coenzyme Q10 (CoQ10) exists in the body in two forms: ubiquinol and ubiquinone. Both take part in the same redox cycle and the same mitochondrial electron transport chain (ETC), but they don't play identical roles at every stage. How each form works matters biologically for choosing the form that best fits your product's intended positioning.

The CoQ10 Redox Cycle

CoQ10 cycles continuously between oxidized and reduced states as electrons transfer back and forth. Ubiquinone accepts electrons and is reduced to ubiquinol. Ubiquinol donates electrons and is oxidized back to ubiquinone. Redox cycling lets both forms participate in the mitochondrial ETC, supporting the generation of ATP, the cell's main energy source.¹² The difference between them becomes most relevant in terms of antioxidant function.

Ubiquinol's Antioxidant Function

Ubiquinol is the active antioxidant form of CoQ10. Because it's already in its reduced state, ubiquinol can neutralize reactive oxygen species right away, without an additional conversion step. Ubiquinone must be converted to ubiquinol before it can do the same job.

This distinction matters most in lipid-rich environments, such as mitochondrial membranes, cell membranes, and lipoproteins, where oxidative reactions can spread once they begin. Ubiquinol is the only lipid-soluble antioxidant the body makes, giving it a distinct role in protecting lipid structures from oxidative stress.²³

Circulating Form & Conversion

In healthy adults, ubiquinol is the main form of CoQ10 found in the blood, typically making up 95% or more of total CoQ10.⁴⁵ Because ubiquinone must be converted to ubiquinol before being transported in the blood and acting as an antioxidant, formulations built around immediate antioxidant activity may do better with the already-reduced form.

Bioavailability

Kaneka Ubiquinol® is shown to be three times better absorbed than a conventional CoQ10 supplement.⁶⁷ Also, because ubiquinol does not require conversion for transport in the blood and performance of antioxidant functions,⁸⁹ it can raise and maintain circulating CoQ10 levels more effectively than conventional ubiquinone supplementation.¹⁰

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.



Why Form Matters for Formulators

Choosing between ubiquinone and ubiquinol is a matter of aligning biological role with product positioning:

- **Energy production** is a factor both forms support, through their shared role in the redox cycle and the ETC.
- **Antioxidant and oxidative-balance activity** is where ubiquinol stands out, thanks to its immediate antioxidant activity, prominence in the blood, and role in lipid-phase environments.
- **Conversion burden** matters when formulating for populations in which CoQ10 status or conversion efficiency may already be reduced, such as in older populations.⁴⁹
- **Bioavailability data** should guide format and dosing decisions, especially when absorption claims are part of the product story.

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Formats

Kaneka Ubiquinol® is available as a pure crystalline powder for use in the following product applications:

- Softgels
- Gummies
- Cap-within-cap
- Liposomal formulations
- Liquid capsules
- Other light- and oxygen-controlled environments

Kaneka Ubiquinol® is also available in an air-stable form as Kaneka Q30™, a 30% Ubiquinol powder. Additional applications include:

- Stick packs
- Sachets
- Soft chews

Packaging

- 1 kg or 5 kg units
- MOQ: 1 kg
- Q30 MOQ: 3 kg



Safety

Kaneka Ubiquinol® has a well-established safety profile as demonstrated by extensive clinical trial data.

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CoQ10 Function	Ubiquinone	
CoQ10 Form	Oxidized form of CoQ10	Reduced form of CoQ10
Role in Redox Cycling	Accepts electrons and is reduced to ubiquinol	Donates electrons and is oxidized to ubiquinone
Role in the Electron Transport Chain	Participates in electron transfer by accepting electrons from ETC complexes	Participates in electron transfer by donating electrons further along the ETC
Antioxidant Function	Must be reduced to ubiquinol before performing antioxidant functions	Performs antioxidant functions in its reduced state without first requiring conversion
Lipid-Phase Activity	Part of the CoQ10 redox system within lipid-rich mitochondrial membranes	Active within lipid environments , including cellular membranes, mitochondrial membranes, and lipoproteins
Circulating Form	Present in blood as a very small part of total CoQ10	Predominant form of CoQ10 found in circulation (≥95% in a healthy person)¹⁵
Conversion Consideration	Requires reduction to ubiquinol to perform antioxidant functions and be transported in the blood	Already in the reduced antioxidant and transportable form; no conversion required¹⁶
Bioavailability	Conventional CoQ10, reference point for comparison	3x better absorbed than conventional CoQ10 ¹⁷
Formulation Fit	Energy-production-forward positioning; general CoQ10 category entries	Antioxidant, oxidative balance, health span maintenance, healthy aging, reproductive, and mitochondrial health categories

The Kaneka Ubiquinol® Difference

Kaneka Ubiquinol® is made as the all-trans isomer—bioidentical to the ubiquinol the body naturally produces—using controlled microbiological fermentation and validated quality systems. Kaneka was the first to successfully stabilize ubiquinol for commercial supplementation, solving the oxidative instability that had limited it as a standalone ingredient.

50

50 years of ubiquinone and ubiquinol research and testing

100+

Subject of 100+ clinical studies



Free from cis-isomers produced during synthetic CoQ10 manufacturing



Made in the USA

References

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