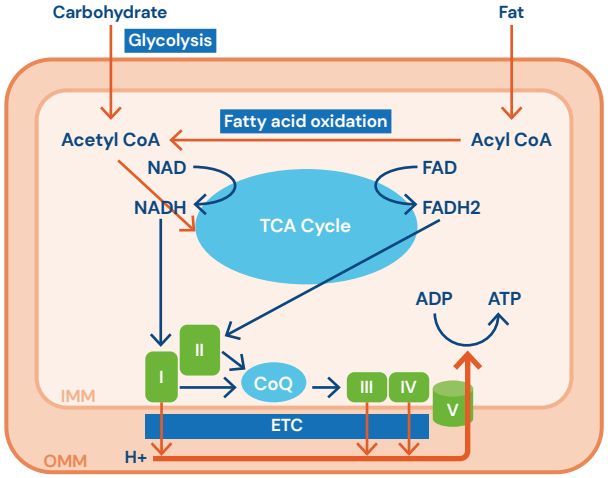

5 specific methods to optimize your mitochondrial metabolism
NUTRINED

Carbohydrates & fatty acids fuel mitochondria

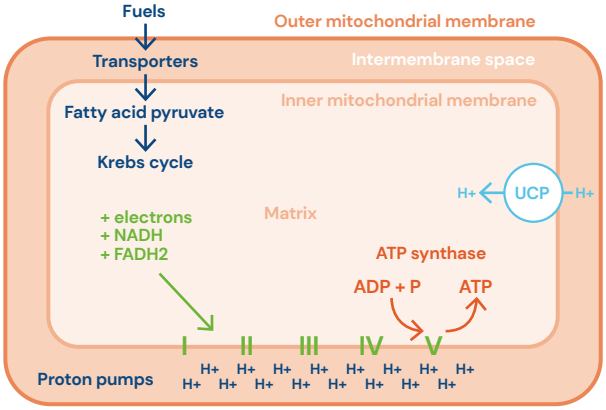
Inside our mitochondria carbohydrates & fatty acids are oxidized. The energy in carbohydrates and fatty acids is captured by cofactors NAD & FAD.

Cofactors deliver the captured energy as electrons to the Electron Transport Chain (ETC).



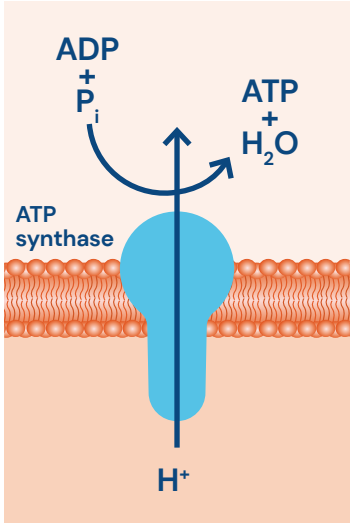
What are the fundamentals of mitochondrial function?

In the ETC, electrons are transferred from 1 complex to the other (starting from Complex 1 → Complex 5). Simultaneously protons are pumped out. At the end of this chain protons are reset between in and out. Finally protons accumulate on top on ATP synthase and ATP is formed.



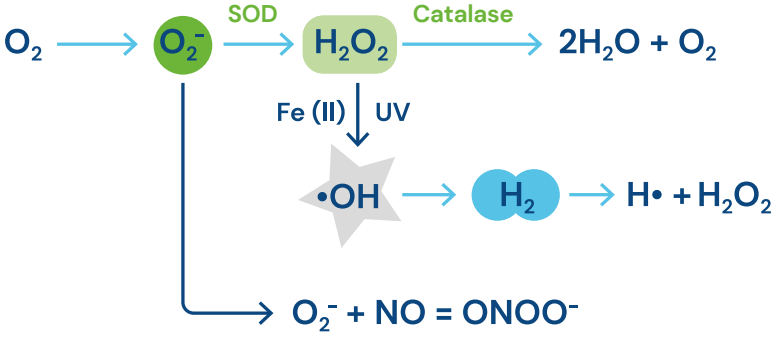
What is Complex 5?

There is an influx of protons to produce ATP.



Leakage of electrons in the Electron Transport Chain ETC

We observe a mild leakage of electrons in the ETC (usually not more than 2%). We are equipped with endogenous antioxidant systems to neutralize the leakage of electrons (Glutathione, SOD & Catalase).



In situations with more leakage of electrons - like cancer, insulin resistance, fatty liver disease and more - this additional loss of electrons is causing damage to the mitochondria. Damaged mitochondria produce and store less ATP energy.

Points of intervention

1
Optimizing the further breakdown of carbohydrates and pyruvate in the Kreb's cycle

2
Empowering the ETC and Complex 2 with more Q10

3
Additional mitochondrial antioxidants

4
Repairing damaged mitochondria using Lipid Replacement Therapy or Energy

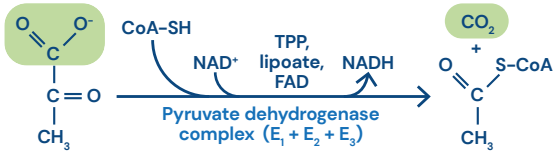
5
Optimizing the synthesis of ATP, delivering more building blocks like Ribose and Phosphate donors

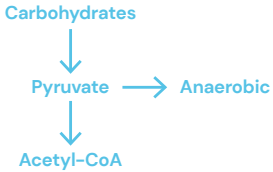
1

Optimizing the further breakdown of carbohydrates & pyruvate in the Kreb's cycle

→ **Cofactor B Complex**
→ **Krebsplus**
→ **CogniFuel**

The pyruvate enzyme complex can be affected by toxicants (metal toxins, fungal toxins)



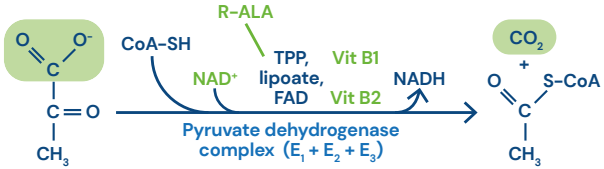


TPP = Thiamine pyrophosphate (vitamin B1)
FAD = Flavin adenine dinucleotide (vitamin B2)
Lipoate = Lipoic acid
NAD+ = Nicotinamide adenine dinucleotide (vitamin B3)

Lactic acid ↑, pyruvate ↑

Cofactors can be used to optimize

- Vit B1
- Vit B2
- R-Alpha-lipoic acid
- NAD+



https://pubmed.ncbi.nlm.nih.gov/11916749/ = Am J Clin Nutr. 2002 Apr;75(4):616-58. doi: 10.1093/ajcn/75.4.616. High-dose vitamin therapy stimulates variant enzymes with decreased coenzyme binding affinity (increased K(m)): relevance to genetic disease and polymorphisms, Bruce N Ames 1, Ilan Elson-Schwab, Eli A Silver

Co-Factor B Complex

indication	Restoring vitamin B levels Bio-active vitamin B-complex Cofactors in ATP formation Essential cofactors in phase I detoxification
dosage	Take 1 tablet per day during breakfast
packaging	30 tablets per container

composition (based on 1 tablet)	
Vitamin B2 (as riboflavin)	200 mg
Vitamin B3 (as nicotinamide)	100 mg
Vitamin B5 (as D-Calcium pantothenate)	92 mg
Vitamin B1 (as thiamin HCl)	63 mg
Pyridoxal-5-phosphate (as coenzym B6)	20 mg
Biotine	5 mg
MTHF	1,62 mg

Krebsplus

indication	Upregulation fatty acid oxidation Optimisation of mitochondrial enzyme affinity More energy for mental and physical activities Mitochondrial support in poor insulin sensitivity
dosage	2 x 1 - 2 caps per day with or after food
packaging	60 vegecaps per container

composition (amount per 2 vegecaps)	
Acetyl-L-Carnitine HCl	1000 mg
R-Alpha-lipoic acid	200 mg
Coenzym Q10	50 mg

CogniFuel

indication	Prevention and treatment of various neurological disorders and neurodegenerative diseases Cognitive disorders Mitochondrial dysfunction and optimisation	
dosage	3 x 1 caps per day	
packaging	90 vegecaps per container	
composition (amount per 3 vegecaps)	Centella Asiatica	1000 mg
	Coffea (Whole Coffee Fruit Extract)	200 mg
	Vit B3 (as Nicotinamide riboside)	200 mg
	PQQ	20 mg

2

Empowering the ETC and Complex 2 with more Q10

→ Q10 Power

Co Q10 Power™ 400 mg

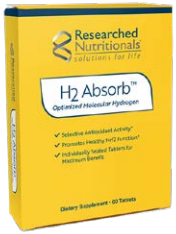
indication	Pathologies for which high doses of Co Q10 are required Dissolved form of Q10 guarantees optimal bioavailability	
dosage	Take 1 softgel per day with food	
packaging	60 softgels per container	
composition (based on 1 softgel)	Coenzym Q10	400 mg

3

Additional mitochondrial antioxidants

→ H_2 Absorb
→ Trifortify

H_2Absorb™



indication	Molecular hydrogen Powerful antioxidant crossing biomembranes like mitochondria and blood brain barrier to neutralize the most reactive ROS and RNS	
dosage	Take 2 x 1 soluble tablet per day in non-carbonated water Wait for the tablet to dissolve and drink immediately	
packaging	60 soluble tablets per container	
composition (based on 2 soluble tablets)	RN Ionic Hydrogen matrix (Dextrose, Malic acid, tartaric acid) Magnesium (as magnesium oxyde, glycinate, malate)	1040 mg 160 mg

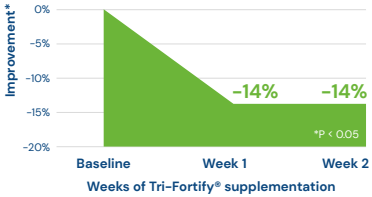
Sinha, R., Sinha, I., Calcagnotto, A., Trushin, N. Oral supplementation with liposomal glutathione elevates body stores of glutathione and markers of immune function. Eur J Clin Nutr. 2018 Jan;72(1):105–111

Nicolson, G. L., Ferreira de Mattos, G., & Settineri, R. Clinical Effects of Hydrogen Administration: From Animal and Human Diseases to Exercise Medicine. International Journal of Clinical Medicine, 2016, 7, 32-76

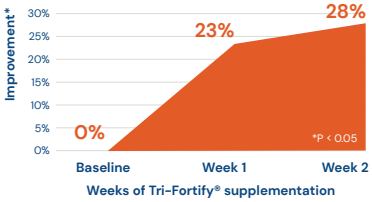
Tri-Fortify Watermelon® or Orange®

indication	Detoxification with glutathione in high bioavalable formulation Powerful antioxidant on tissue level and brain level Natural Killer Cell support	
dosage	1 teaspoon (1 pack) per day, away from food	
packaging	236 ml per tube or 20 packs per box	
composition (based on 1 teaspoon = 5 cc or 1 pack)	Glutathione Liposomal Vitamin C	450 mg 50 mg

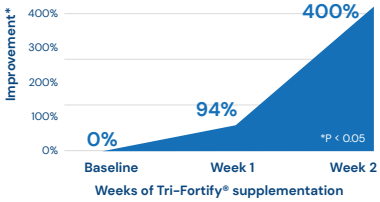
Oxidative stress markers
Oxidized / Reduced GSH



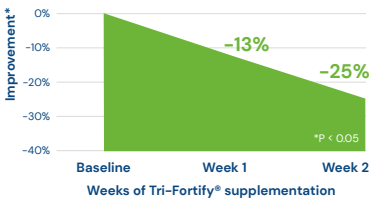
Glutathione levels
Increase in red blood cell levels (Erythrocytes)



Immune function
Natural Killer Cell activity



Lipid Peroxidation
(Reduced Cellular Membrane Oxidation)



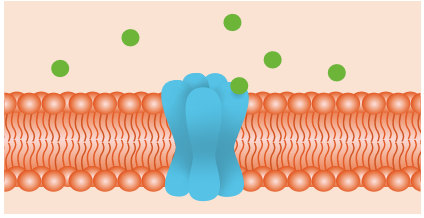
Published research: Sinha, R., Sinha, I., Calcagnotto, A., Trushin, N. Oral supplementation with liposomal glutathione elevates body stores of glutathione and markers of immune function. Eur J Clin Nutr. 2018 Jan;72(1):105–111.

4

Repairing damaged mitochondria using Lipid Replacement Therapy

→ **NT Factor Energy**
→ **ATP Fuel**
→ **ATP 360**

Membrane Lipid Replacement Therapy is the use of functional oral supplements containing cell membrane glycerolphospholipids and antioxidants to replace damaged membrane lipids that accumulate in cancer and other circumstances with high load of oxidative stress.



Membrane phospholipid damage → loss of mitochondrial function
Compositions contain mixtures of glycerolphospholipids, unsaturated fatty acids and fructooligosaccharids.

Different studies showed reduced cancer-related fatigue + reduced side-effects and complications to the treatments.

1st generation
NT Factor Energy – 3 x 2 tablets per day with food for the first 2 months, and then 3 x 1 tablet per day with food. For severe fatigue increase to 3 x 3 tablets per day with food.

81% of the patients on chemotherapy that used NT Factor® experienced improvement: less fatigued, there were fewer side effects.

2nd generation
ATP Fuel – 2 x 5 per day

3rd generation
ATP 360 – 1 x 3 per day during breakfast

Nicolson, Garth L et al. "Clinical Uses of Membrane Lipid Replacement Supplements in Restoring Membrane Function and Reducing Fatigue in Chronic Diseases and Cancer." Discoveries (Craiova, Romania) vol. 4,1 e54. 18 Feb. 2016, doi:10.15190/d.2016.1

Nicolson, Garth L., and Kenneth A. Conklin. "Reversing mitochondrial dysfunction, fatigue and the adverse effects of chemotherapy of metastatic disease by molecular replacement therapy." Clinical & experimental metastasis 25.2 (2008): 161–169.

Pickus, Owen, et al. "Results of a study to evaluate the use of Propax™ to reduce adverse effects of chemotherapy." J Am Nutraceutical Assoc. 3.2 (2000): 17–25.

Results of a study to evaluate the use of Propax® / NT Factor® to reduce adverse effects of chemotherapy: Colodny I, Lynch K, Farber C, Papish R, Phillips K, Sanchez M. J. Am. Nutraceut. Assoc. 2001;3(1):17–25.

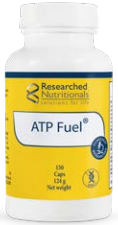
NT Factor™ Energy

indication	Repair of mitochondrial activity in case of lipid peroxidation
dosage	3 x 2 tablets per day with food for the first 2 months, and then 3 x 1 tablet per day with food – For severe fatigue, increase to 3 x 3 tablets per day with food
packaging	90 tablets per container

composition (based on 3 tablets)

NT Factor® maximum potency: NT Factor lipids®, Fructo-oligosaccharides, Rice bran extract, Opti-MSM®, Bromelain, Sulfur, Vit B5 (as calciumpantothenate), Inositol, L-Arginine, L-Glycine, Taurine, Alpha lipoic acid, Garlic, Spirulina, Beetroot fiber, Bifidobacterium bifidum, Leeks stem powder, Lactobacillus acidophillus, Molasses, Boron	2250 mg
Mitochondrial proregulator™: Opti-MSM®, Calcium (as dicalciumphosphate, calciumcitrate, calcium pyruvate), Phosphorus (as dicalciumphosphate)	533 mg
Krebs cycle glucose absorb™: alpha keto glutaric acid, L-Tyrosine	270 mg
Calcium (included in Mitochondrial pro regulator™)	214,5 mg
RN fatty acid metaboliser™: L-carnipure®, L-carnitinetartraat	192 mg
Vitamin B5 (as pantethine) (included in NT factor maximum potency and RN Fatty acid metaboliser™)	76,5 mg
Vitamin E (as alpha tocoferyl succinate)	25,5 mg

ATP Fuel®



indication	Cognitive and physical fatigue Repair of the damaged mitochondrial membranes in case of oxidative stress
dosage	10 caps per day for the first 2 months: take 5 caps during breakfast and 5 caps during lunch or dinner At month 3 and beyond: 5 caps during breakfast
packaging	150 caps per container

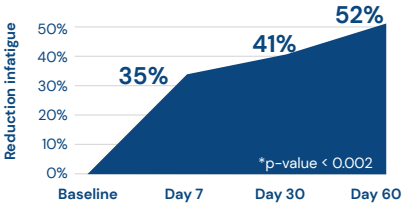
composition (based on 5 caps)

NT Factor® maximum potency: NT Factor lipids®, Fructo-oligosaccharides, Rice bran extract, Opti-MSM®, Bromelain, Sulfur, Vit B5 (as calcium- pantothenate), Inositol, L-Arginine, L-Glycine, Taurine, Alpha lipoic acid, Garlic, Spirulina, Beetroot fiber, Bifidobacterium bifidum, Leek stem powder, Lactobacillus acidophilus, Molasses, Boron	2000 mg
Mitochondrial proregulator™: Opti-MSM®, Calcium (as Dicalcium phosphate, Calciumcitrate, Calcium pyruvate), Phosphorus (as Dicalcium phosphate)	432 mg
Krebs cycle glucose absorb™: Alpha keto glutaric acid, L-Tyrosine	180 mg
RN fatty acid metaboliser™: L-carnipure®, L-Carnitinetartraat	141 mg
Calcium (included in Mitochondrial pro regulator™)	137 mg
Vitamin B5 (as Pantethine) (included in NT factor maximum potency and RN Fatty acid metaboliser™)	51 mg
Krebs Energy Foundation: Coenzyme Q10, NADH	35 mg
Vitamin E (as Alpha tocopheryl succinate)	17 mg

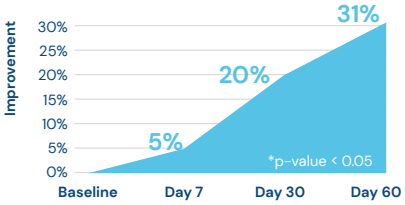
ATP 360™

indication	Mitochondrial repair Cognitive and physical fatigue	
dosage	Take 3 caps per day in the morning with breakfast	
packaging	90 vegecaps per container	
composition (based on 3 vegecaps)	Phosphatidylcholine	200 mg
	Acetyl-L-Carnitine	200 mg
	Vitamin C (as ascorbic acid)	100 mg
	Co Q 10	100 mg
	Phosphatidylethanolamine	80 mg
	R-lipoic acid	75 mg
	Phyto Glycolipids	65 mg
	Phosphatidylinositol	55 mg
	Magnesium (as dimagnesium malate)	50 mg
	Vitamin B1 (as thiamine HCl)	50 mg
	Alpha ketoglutaric acid	50 mg
	Riboflavin (as Riboflavin-5-phosphate)	42 mg
	Tocotrienols (Deltagold)	30 mg
	Pyrroloquinoline Quinine (PQQ)	10 mg
	NADH (Panmol)	5 mg

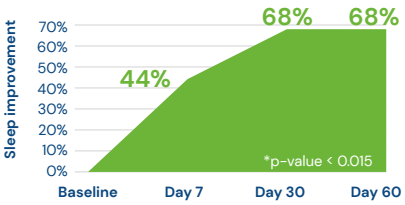
Fatigue reduction*



Mental functioning*



Sleep improvement*



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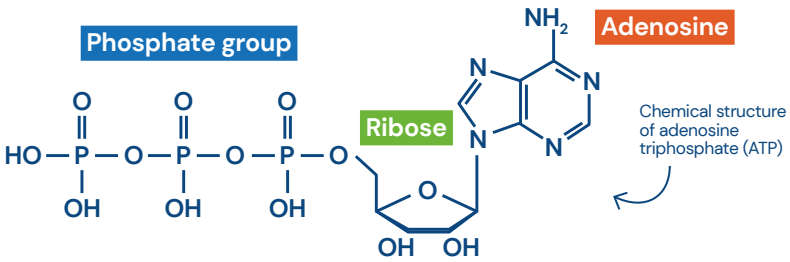
Optimizing the synthesis of ATP, delivering more building blocks like Ribose and Phosphate donors

→ MorATP

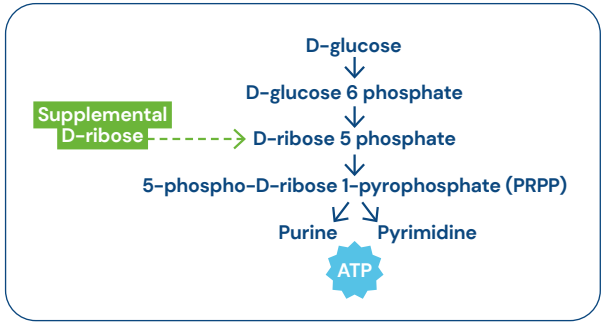
The role of ribose



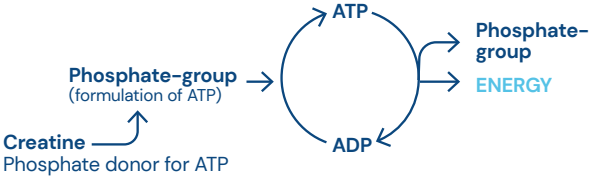
The ATP molecule is composed of an adenosine ring and a ribose sugar with three phosphate groups. From the high energy bonds among the phosphate group, ATP is produced.

Supplemental D-Ribose has been shown to improve cellular processes in situations with mitochondrial dysfunction.

Supplemental D-Ribose will bypass the part of the pentose pathway to produce D-Ribose-5-phosphate.



Direct supply of ribose saves a lot of time: 5-8 x quicker!
Creatine is synergist for ribose.



MorATP

indication	Recycling ATP energy Mitochondrial support
dosage	Take 2 x 2 chewing tabs per day before or with food
packaging	120 chewing tabs per container
composition (based on 4 chewing tabs)	D-Ribose 5000 mg Creatine monohydrate 2000 mg

Mahoney DE, Hiebert JB, Thimmesch A, et al. Understanding D-Ribose and Mitochondrial Function. Adv Biosci Clin Med. 2018;6(1):1-5. doi:10.7575/aiac.abcmed.v.6n.1p.1

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