TABLE 7.1 Supplements for Optimizing Mitochondrial Health

Supplement	Summary of Research	Typical Recommended Dose	Aimee's Notes and Recommendations
CoQ10	Enhances mitochondrial energy (ATP) production, improves egg and embryo quality, reduces oxidative damage in oocytes and sperm. Synergistic with vitamin E and ALA. Strongest evidence in IVF outcomes.	200–400 mg/d (ubiquinol form preferred)	Definitely take; beware of ones made with GM ingredients, especially avoid those with soybean oil.
NAC	Precursor to glutathione. Reduces oxidative stress, improves oocyte and sperm quality, helps insulin sensitivity in PCOS, improves sperm DNA integrity.	600–1,200 mg/d	Definitely take, especially if you suspect or have been diagnosed with endometriosis or autoimmunity.
Glutathione	Master antioxidant; protects mitochondrial and DNA integrity in eggs and sperm. Supports embryo development.	250–500 mg/d (liposomal) or support with NAC and ALA	You don't need to take both NAC and glutathione; because NAC is a precursor to glutathione, supplementing with one is typically sufficient to support your antioxidant and mitochondrial needs.
L-Carnitine	Transports fatty acids into mitochondria. Supports oocyte maturation and sperm motility. Especially helpful in mitochondrial-based infertility.	1,000–2,000 mg/d (L-carnitine) and 500 mg/d (acetyl-L-carnitine)	I always use this for improving sperm. When it comes to egg quality, I will recommend this in my DOR or over-40 female clients.
ALA	Regenerates glutathione and supports mitochondrial enzyme activity. Improves oocyte quality, insulin sensitivity, and sperm DNA integrity.	300–600 mg/d (R-ALA preferred) between meals	Definitely take for egg quality.

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TABLE 7.1 Supplements for Optimizing Mitochondrial Health (*continued*)

Supplement	Summary of Research	Typical Recommended Dose	Aimee's Notes and Recommendations
PQQ	Stimulates mitochondrial biogenesis, improves mitochondrial density and ATP output in oocytes and sperm. Synergistic with CoQ10 and resveratrol.	10–20 mg/d	Definitely take for egg and sperm quality.
Resveratrol	Activates sirtuins and mitochondrial biogenesis. Enhances chromosomal alignment and reduces oxidative stress in oocytes. Improves sperm motility. Use with caution postovulation.	100–250 mg/d (follicular phase only)	Powerful anti-inflammatory and regulates insulin. I would use it for endometriosis, DOR, and PCOS.
Melatonin	Mitochondrial antioxidant and follicular protector. Improves egg quality, supports oocyte maturation, and protects sperm DNA.	0.3–1 mg/d 60–90 minutes before bed	Do NOT take more than 1 mg/d. Doses of melatonin higher than 1 mg daily may negatively affect female fertility by suppressing LH and disrupting the delicate balance of reproductive hormones needed for ovulation and regular menstrual cycles.
Myoinositol	Improves mitochondrial efficiency, oocyte maturation, and sperm motility. Well studied in PCOS and IVF populations.	2,000 mg twice daily (plus 50 mg D-chiro-inositol)	Definitely take with PCOS and insulin resistance.
NMN/NR (NAD+)	Boosts NAD^+; improves mitochondrial metabolism, DNA repair, and egg quality. Restores oocyte competence in aged animal models.	250–500 mg/d	I highly recommend this for both egg and sperm quality.

(*continued*)

TABLE 7.1 Supplements for Optimizing Mitochondrial Health (*continued*)

Supplement	Summary of Research	Typical Recommended Dose	Aimee's Notes and Recommendations
Apigenin	Protects mitochondria, reduces ovarian oxidative stress, and preserves NAD^+ by inhibiting CD38. May support estrogen metabolism.	50–100 mg/d	Emerging research shows great promise for optimizing mitochondrial function; I use this regularly with my clients who need extra mitochondrial support.
Fisetin	Clears senescent cells and improves mitochondrial function. Delays ovarian aging and protects sperm DNA.	100–200 mg/d, liposomal; consider 5 d on/ 2 d off	As of writing this book, I am starting to recommend this more, as it's showing great promise in regenerative medicine.
Astaxanthin	Potent mitochondrial antioxidant. Improves sperm motility and protects oocyte mitochondria. Strong free radical scavenger.	4–12 mg/d	Very potent. Strongly recommend for both egg and sperm health.
Ergothioneine	Mitochondrial antioxidant that accumulates in reproductive tissues. Protects oocytes and embryos from oxidative damage.	5–10 mg/d	Emerging research shows great promise for optimizing mitochondrial function; I use this regularly with my clients who need extra mitochondrial support.
Urolithin A	Stimulates mitophagy, improves mitochondrial health, and enhances embryo development. Promising data in human muscle/aging; fertility research emerging.	500–1,000 mg/d (Mitopure)	I don't use this as much as fisetin, ergothioneine, and astaxanthin.
Spermidine	Induces autophagy, supports oocyte mitochondrial function, and delays ovarian aging. Improves sperm ATP and motility.	1–2 mg/d (microbial or wheat germ derived)	Emerging research shows great promise for optimizing mitochondrial function; I use this regularly with my clients who need extra mitochondrial support.

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TABLE 7.1 Supplements for Optimizing Mitochondrial Health (*continued*)

Supplement	Summary of Research	Typical Recommended Dose	Aimee's Notes and Recommendations
AKG	Krebs cycle intermediate, supports mitochondrial ATP production and oocyte epigenetics. Delays ovarian aging and improves embryo quality.	300–1,000 mg/d (calcium or arginine-AKG)	Emerging research shows great promise for optimizing mitochondrial function; I use this regularly with my clients who need extra mitochondrial support.
LDN	Modulates immune system, reduces inflammation in ovarian tissue. Clinical use in autoimmune fertility. Evidence still emerging (n/a—observational/ clinical experience).	1.5–4.5 mg nightly (Rx only, under MD supervision)	I have recommended this for a decade, especially in my autoimmune and endometriosis patients.
Serrapeptase	Enzyme that breaks down scar tissue and supports ovarian blood flow. May improve mitochondrial environment by reducing inflammation and adhesions (clinical reports; limited formal fertility data).	40,000–120,000 IU/d on an empty stomach	I have recommended this for a decade, especially in my autoimmune and endometriosis patients.

AKG, alpha-ketoglutarate; ALA, alpha lipoic acid; ATP, adenosine triphosphate; CoQ10, coenzyme Q10; DOR, diminished ovarian reserve; GM, genetically modified; IVF, in vitro fertilization; LDN, low-dose naloxone; LH, luteinizing hormone; NAC, *N*-acetyl cysteine; NAD, nicotinamide adenine dinucleotide; NMN, nicotinamide mononucleotide; NR, nicotinamide riboside; PCOS, polycystic ovarian syndrome; PQQ, pyrroloquinoline quinone.