

MitoQ

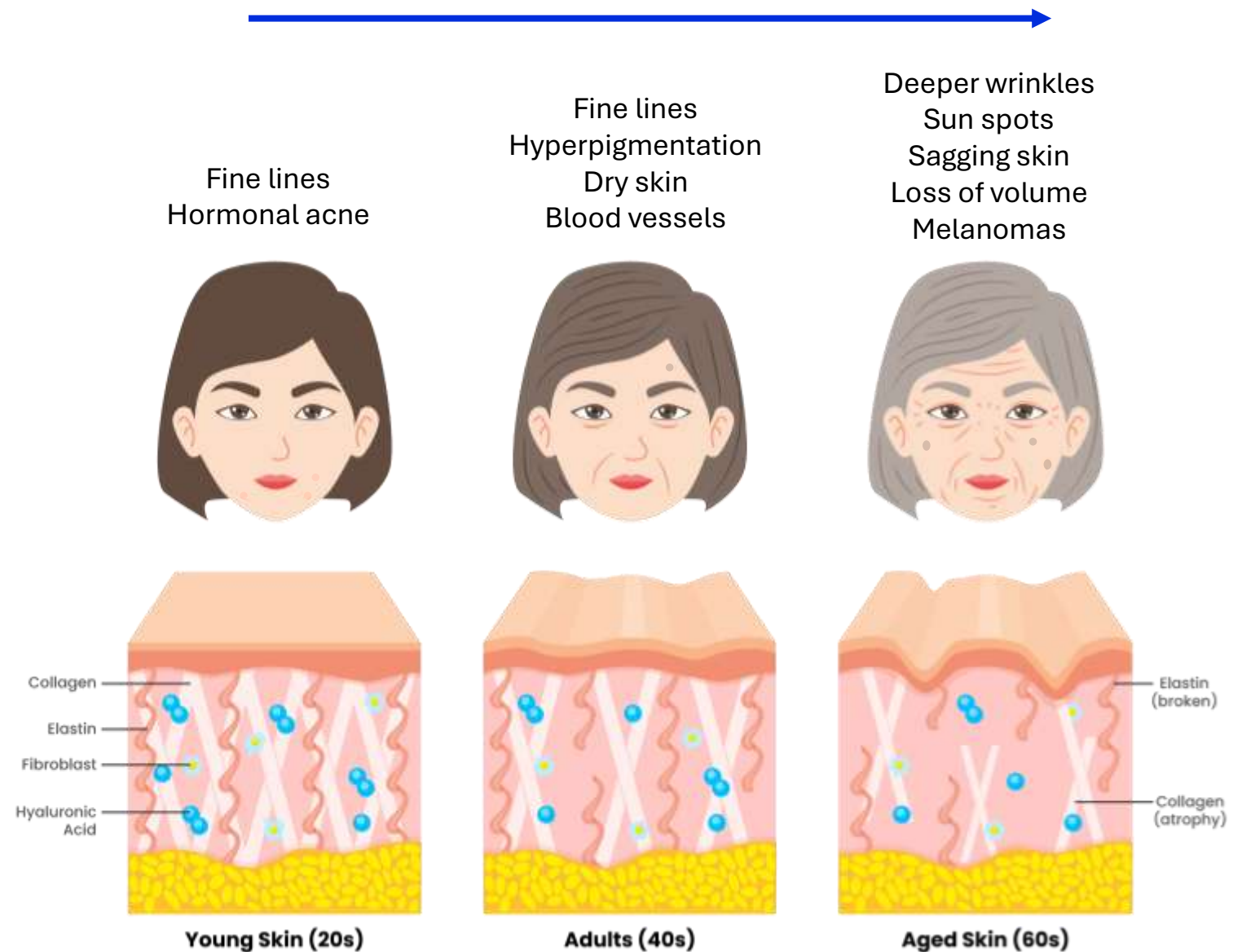
Synergistic Antioxidant Innovation for Skin Health: Targeting Mitochondria

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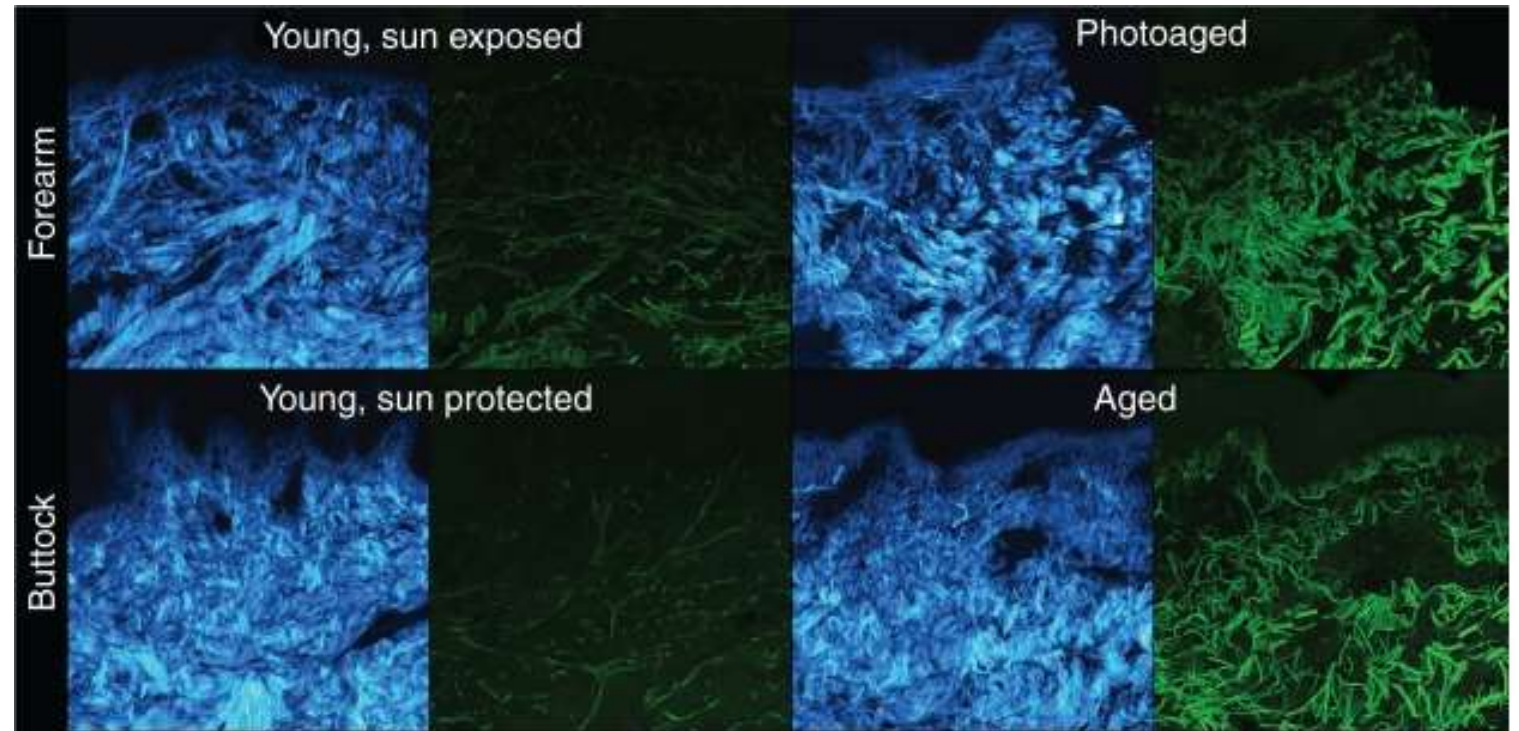
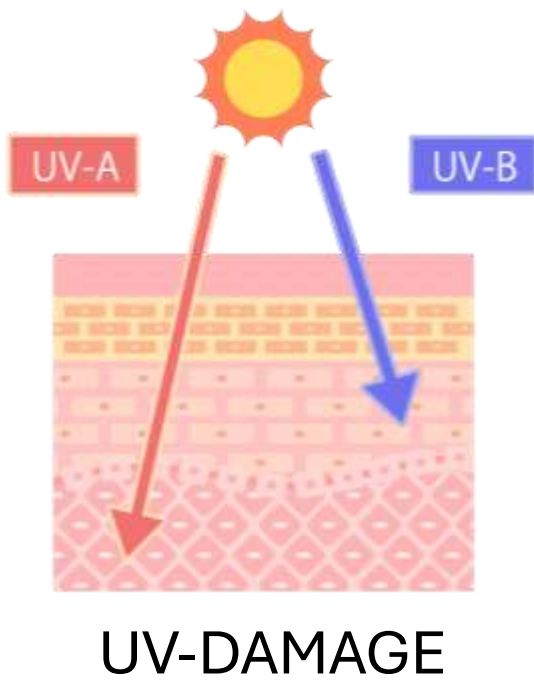
Skin Aging

- Happens naturally over time
- Caused by intrinsic and extrinsic factors
 - Genetics
 - Metabolism
 - Biological age
 - Telomere shortening
 - Mitochondrial dysfunction
- Air pollution
- UV exposure
- Smoking

PHOTOAGING



Photoaging – it's not about sunburns



Rittié, L., & Fisher, G. J. (2015). Natural and sun-induced aging of human skin. *Cold Spring Harbor perspectives in medicine*, 5(1), a015370. <https://doi.org/10.1101/cshperspect.a015370>

The Defective Powerhouse Model - Mitochondria

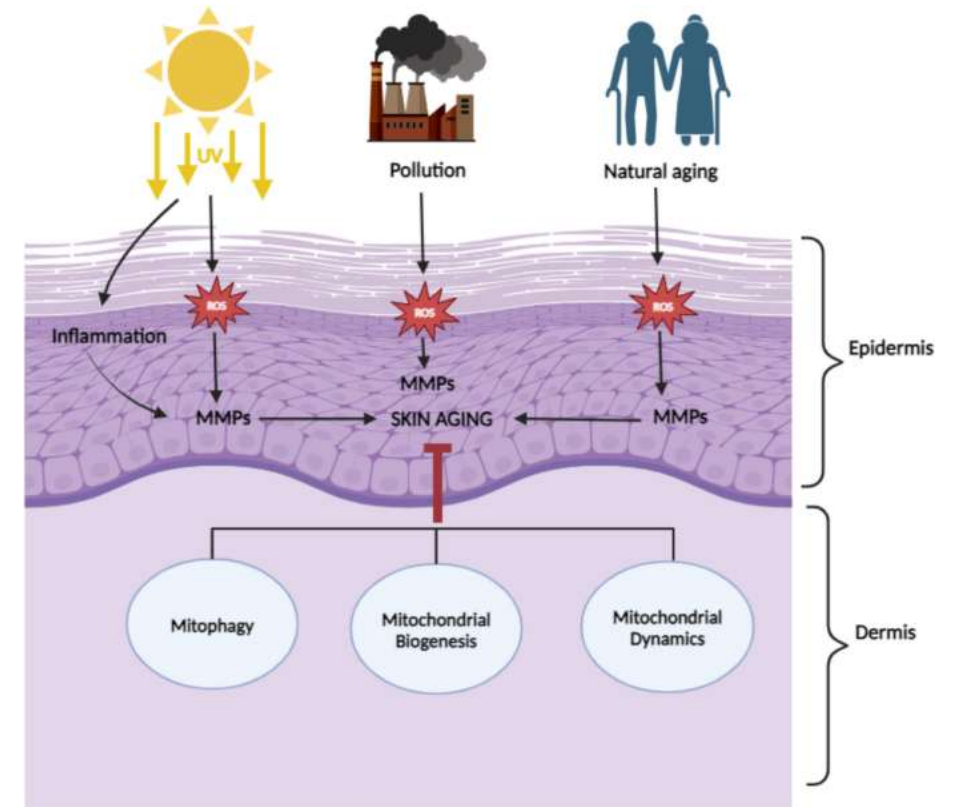
In the skin, mitochondria play a crucial role in cell signalling, wound healing, pigmentation, vasculature homeostasis and hair growth.

Dysfunctional mitochondria lead to:

- Excess ROS
- NuclearDNA and mtDNA damage
- Disruption of melanocytes

Skin pathologies associated with mitochondria

- Aging
- Vitiligo
- Psoriasis
- Melanomas



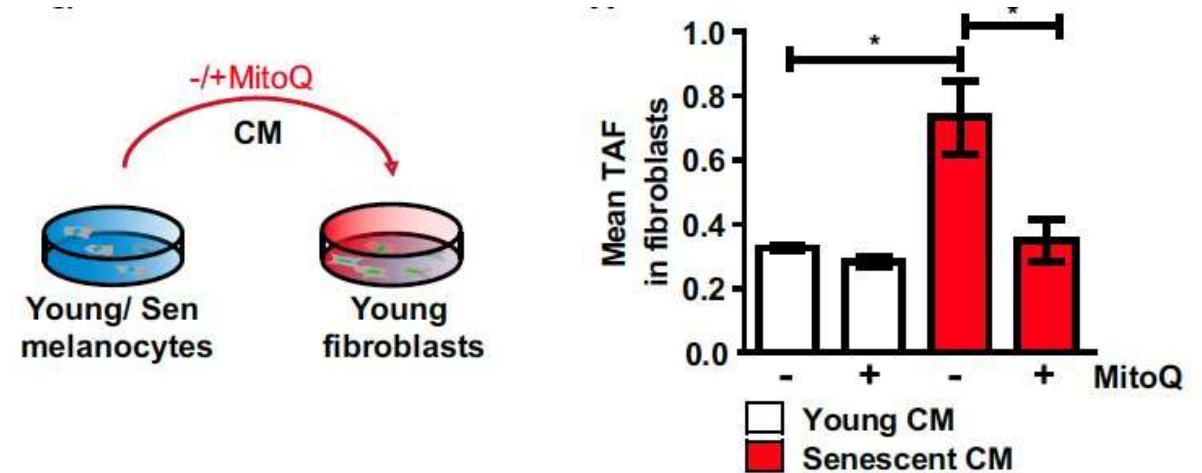
[Mitochondria in cutaneous health, disease, ageing and rejuvenation—the 3PM-guided mitochondria-centric dermatology | EPMA Journal](#)

Mitoquinol Mesylate

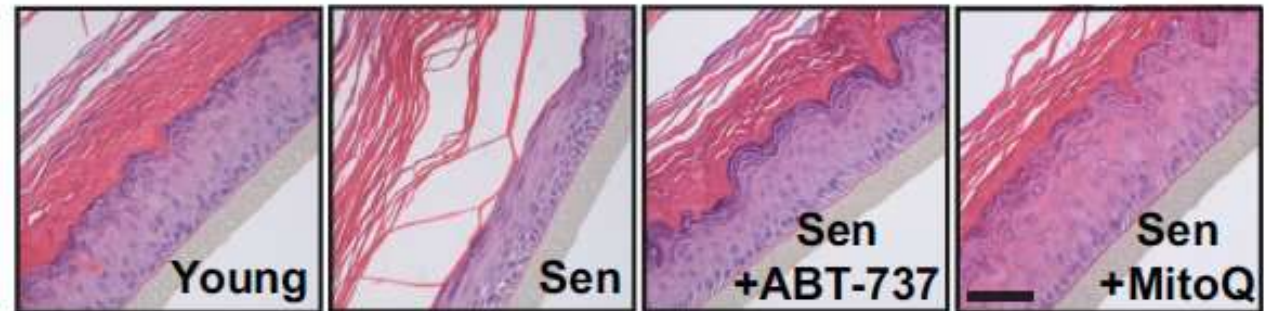
- World first mitochondrially targeted antioxidant
- Improves the antioxidant capacity of the mitochondria
- Activates NRF-2 pathway and increases exogenous antioxidant enzymes:
 - Catalase (CAT)
 - Glutathione peroxidase (GPx)
 - Superoxide dismutase (SOD)
- Reduces excess ROS by up to 48%

13 preclinical studies on skin health

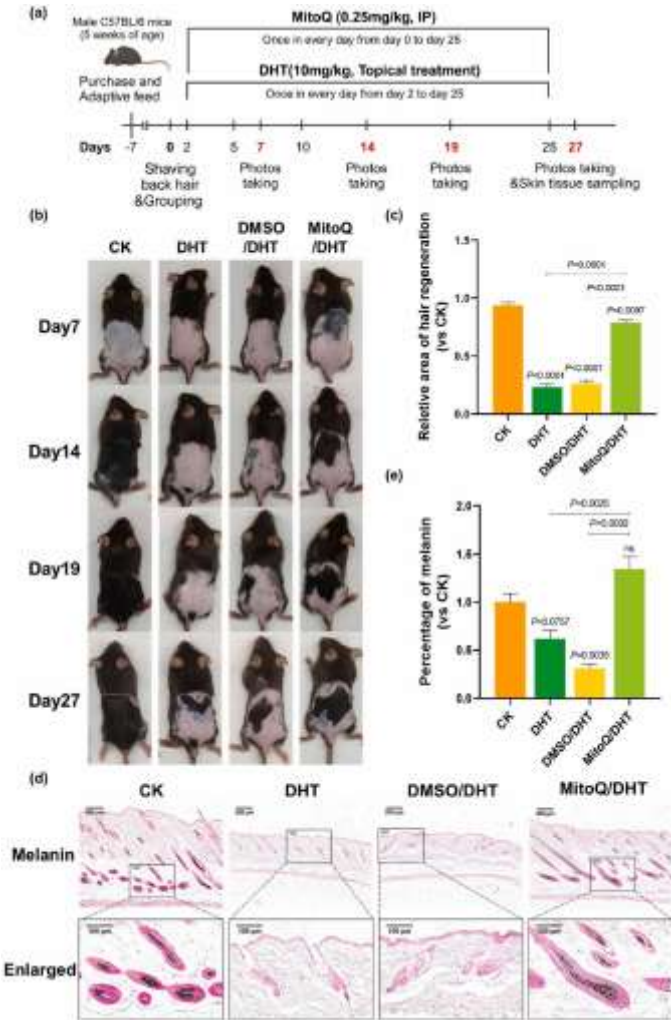
MitoQ cleared senescent cells and improved telomeres in older (senescent) skin cells



MitoQ increased the thickness and improved structure of skin cells from older women



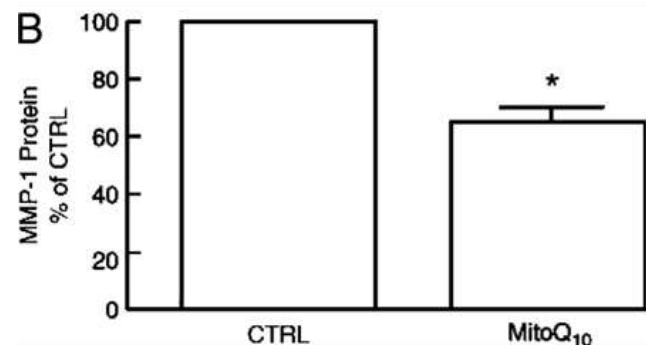
Increase hair regeneration by 244%



Decrease MMP-1 by 40%

MMP1-mediated collagen damage is a major contributor to the phenotype of aged human skin.

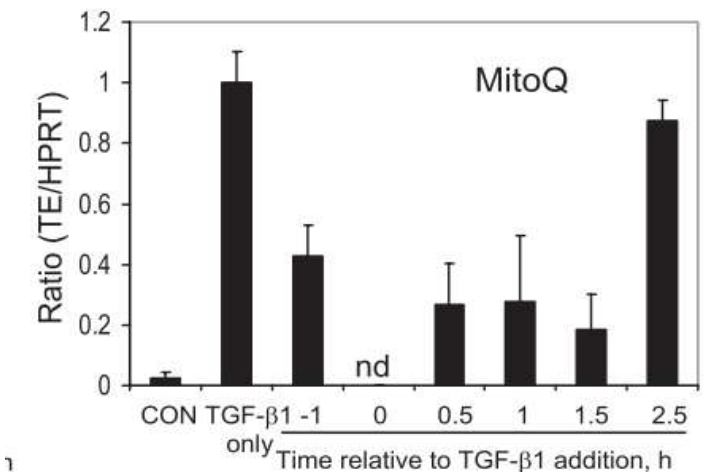
MitoQ helps preserve collagen by decreasing MMP-1 and decreasing free radicals (better than other antioxidants like n acetylcysteine)



Reduce abnormal elastin in photoaged skin by 60%

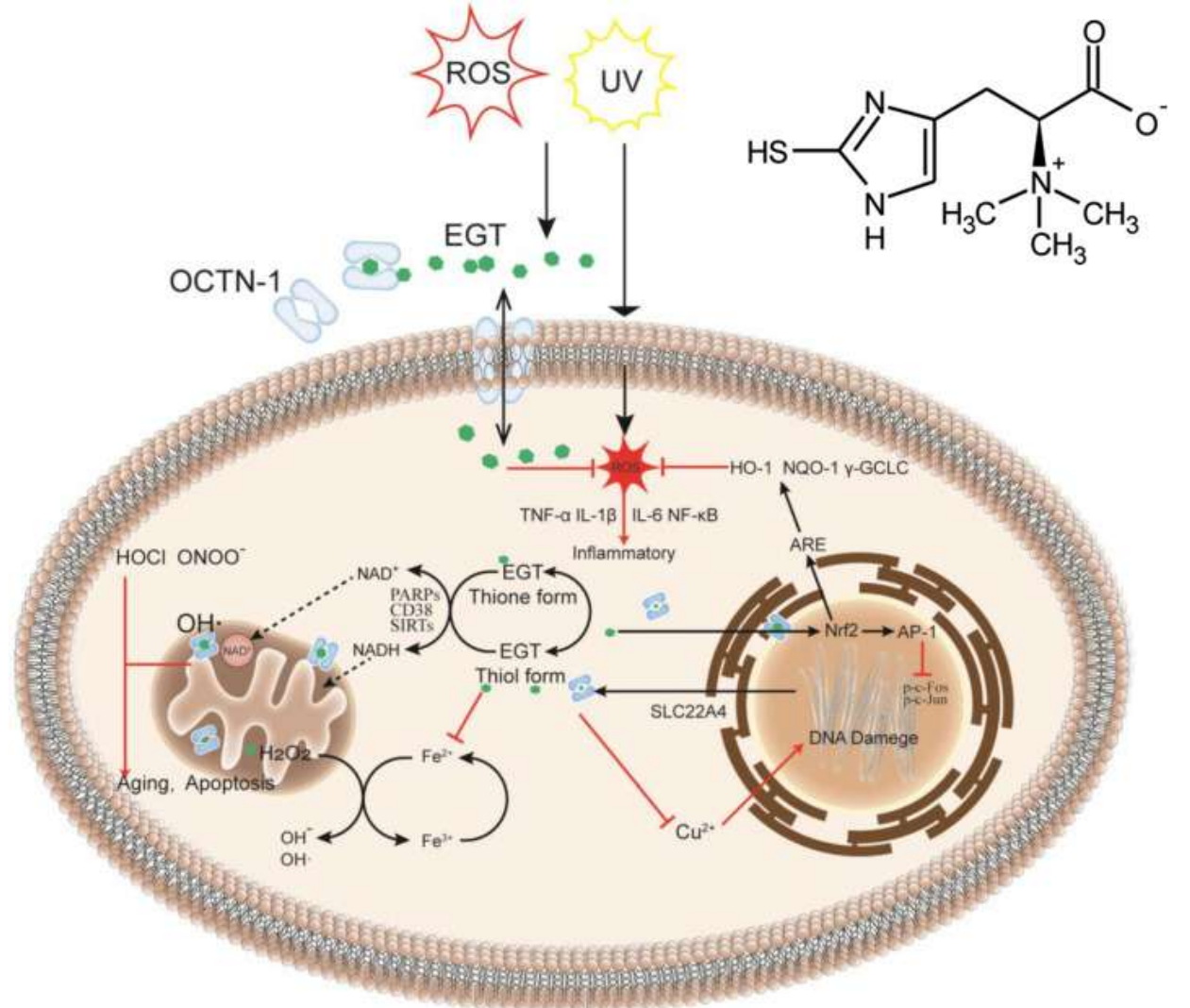
MitoQ caused a 60% decrease in Tropoelastin mRNA level

High TE mRNA level is higher in photoaged skin and UVR-exposed skin. Increased TE synthesis underlies the increase in abnormal elastin in photoaged skin.



Ergothioneine

- A potent antioxidant that must be obtained from the diet (mostly fungi)
- Anti-inflammatory
- Selective uptake into the mitochondria (OCTN-1)
- Plasma levels decrease after 55
- Clinical support for
 - Cognition (memory)
 - Sleep (quality and quantity)
 - Skin (fine lines, elasticity, hydration)



Ergothioneine Skin Health

Ergothioneine has been shown to:

- Improve signs of wrinkles and fine lines by 23% after 28 days
- Improve UV spot and brown spot appearance by 18 and 17% respectively
- Improve skin elasticity by 6%
- Improve skin hydration by 10% and reduce trans epidermal water loss by 12%

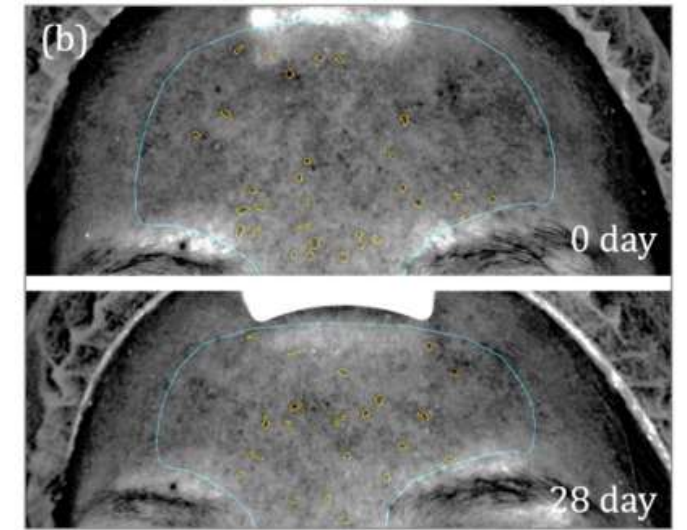


Fig 1. Effect of Ergothioneine on UV spots.

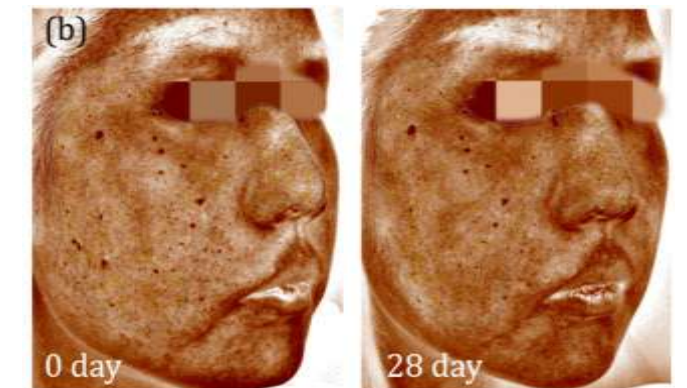


Fig 2. Effect of Ergothioneine on brown spots.

Mitoquinol & Ergothioneine Synergy?

Q: Are there synergistic benefits to combining ergothioneine and mitoquinol mesylate?

Method:

Using an aged zebrafish model we compared the effects of MQ, ERGO, MQ+ERGO, PQQ, Spermidine, and NMN on:

- ROS
- ATP
- Telomere Length
- Telomerase

Compared with the model control group, ***p < 0.001

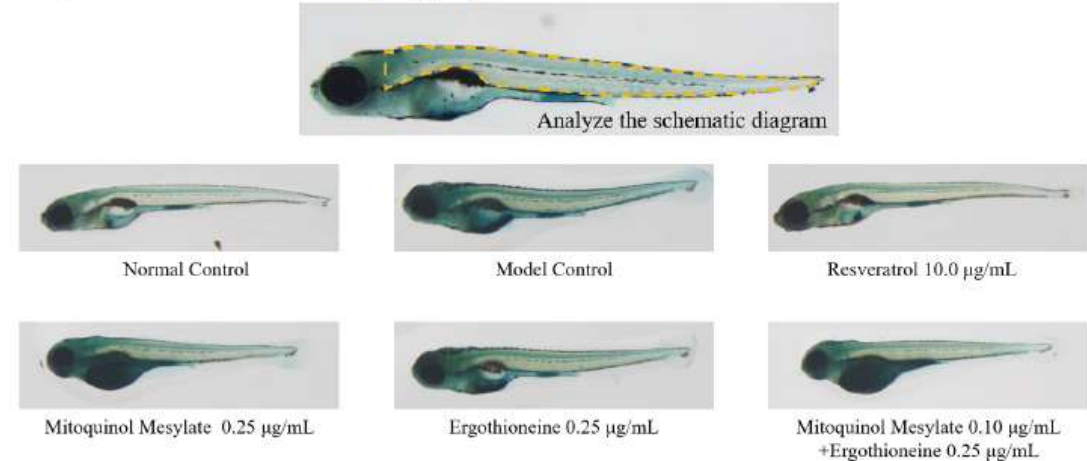
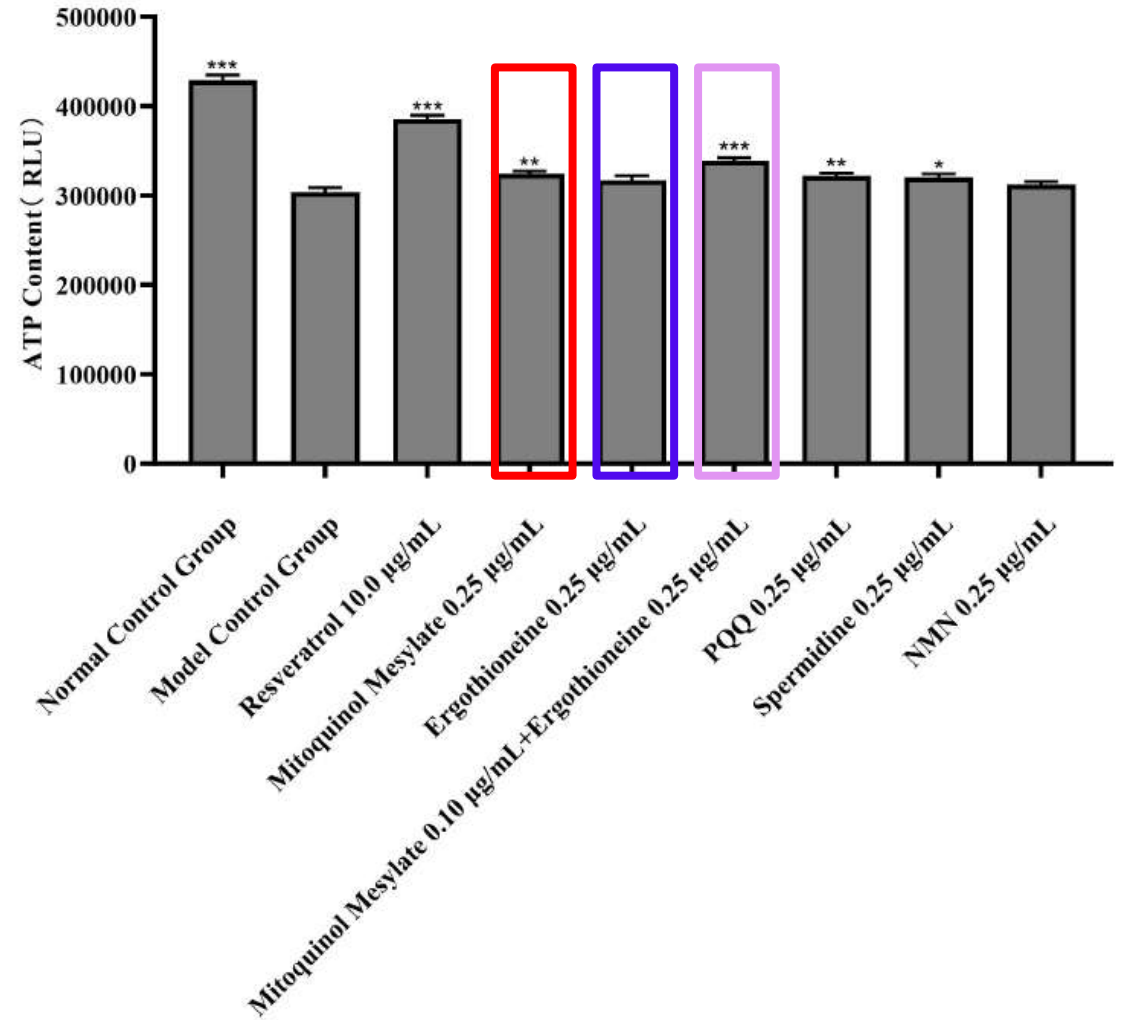
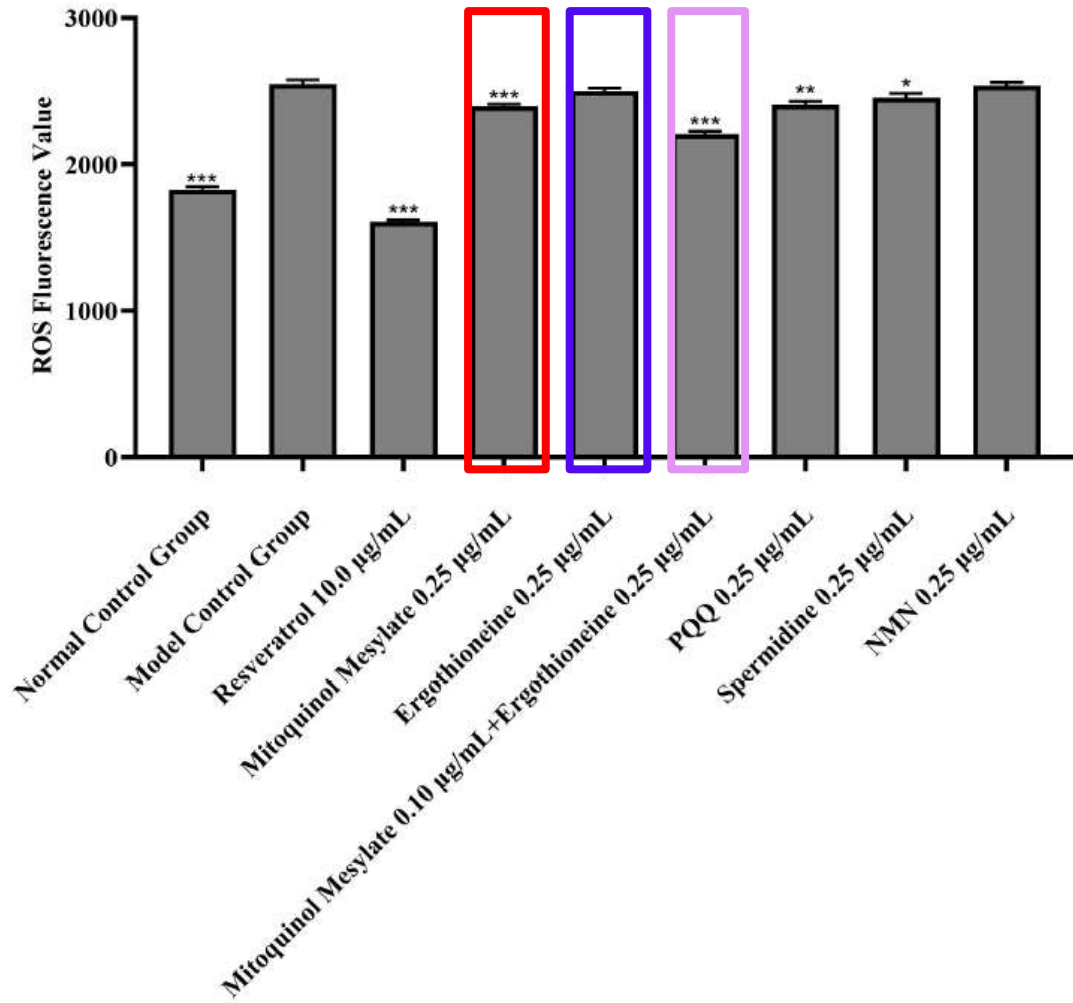
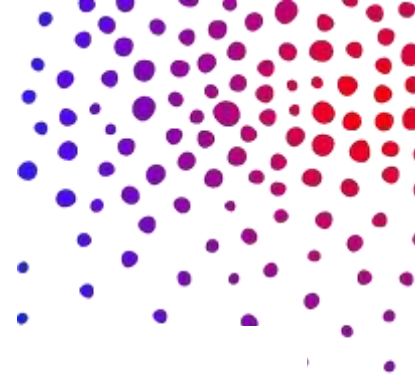


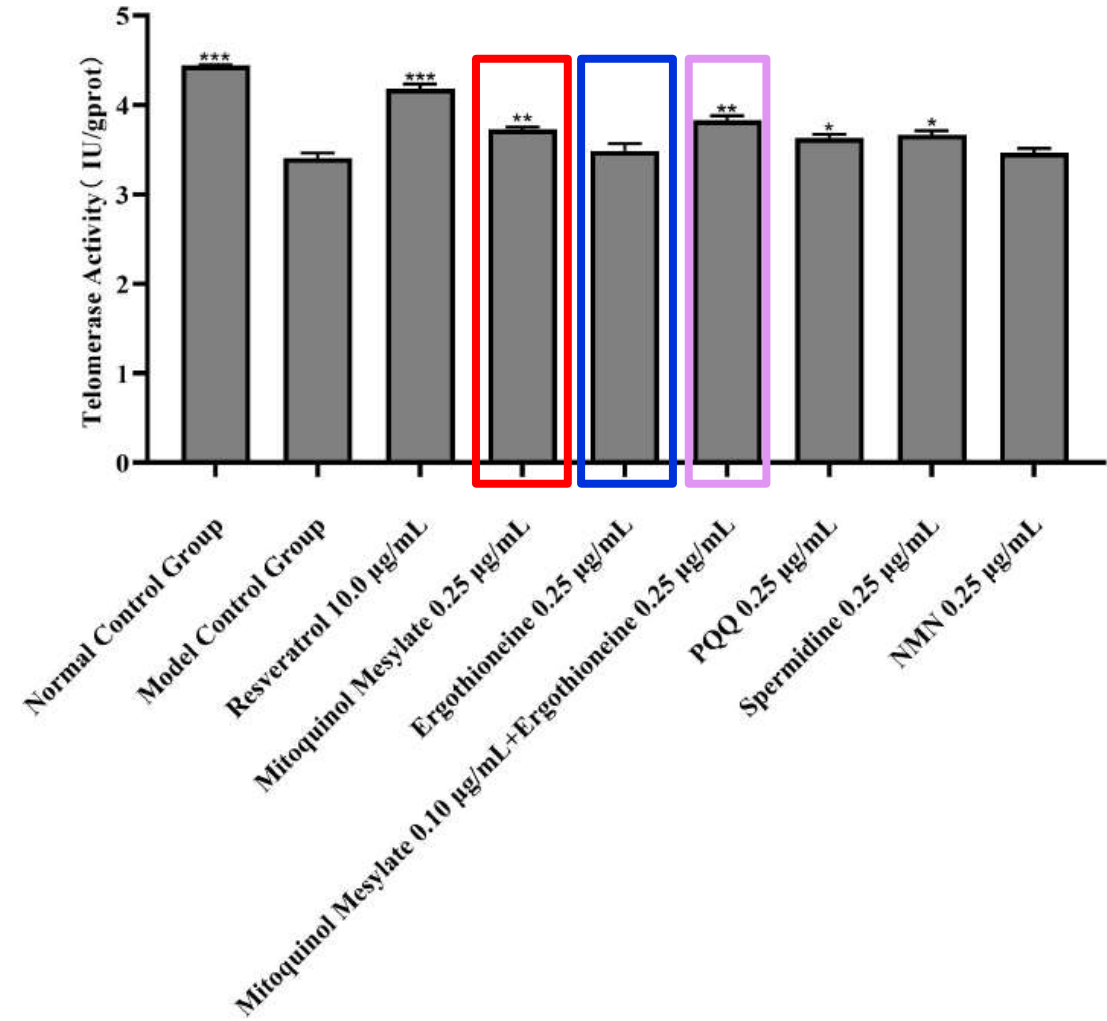
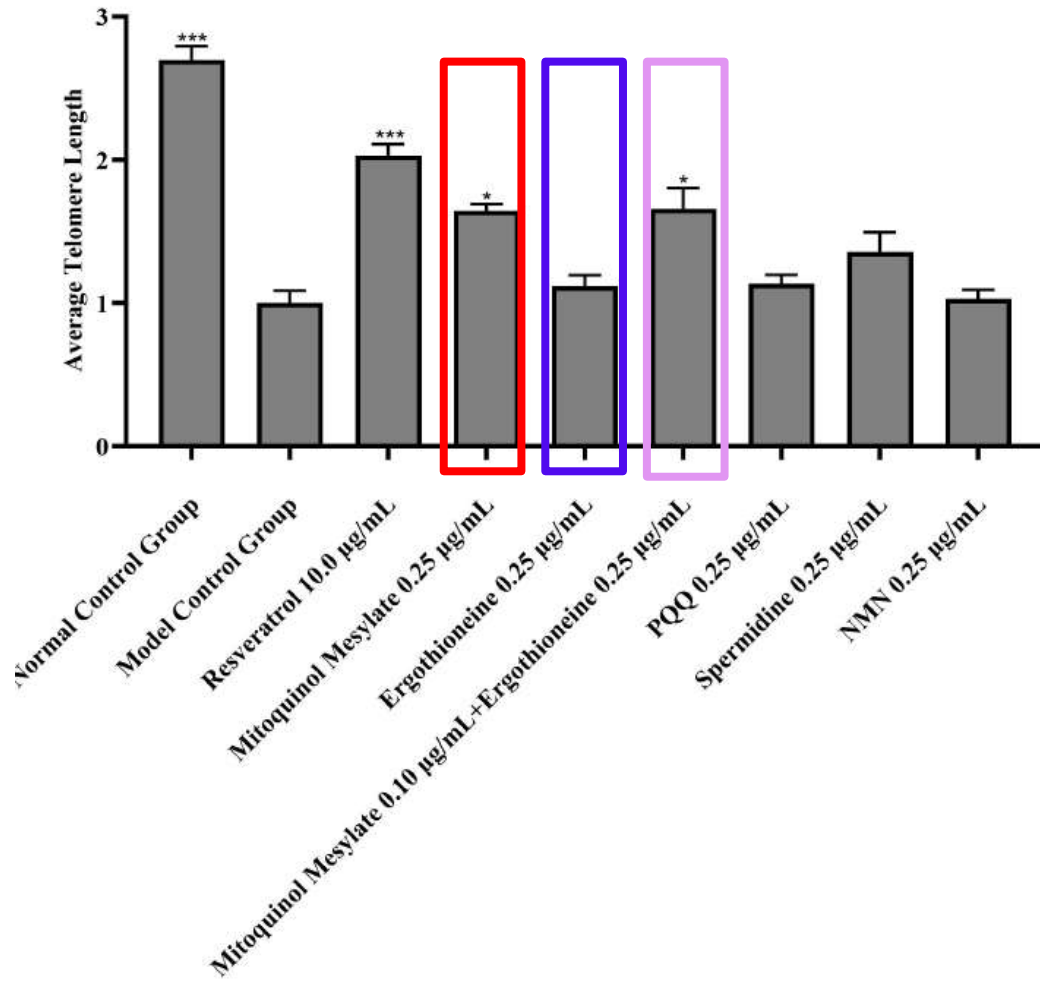
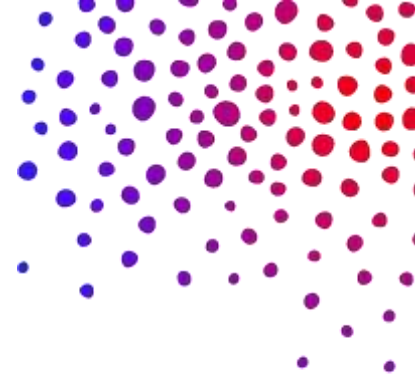
Figure 1-3. Typical Image of β-Galactosidase Staining Intensity in zebrafish after sample treatment

Note: The area within the yellow dashed line box is the analysis region.

Zebra Fish Studies – ROS and ATP



Zebra Fish Studies - Telomeres



MitoQ Derma Elite

Benefits

Synergistic mitochondrial action for skin health

MitoQ Derma Elite combines patented MitoQ Mitoquinol Mesylate and MitoPrime Ergothioneine, delivering dual mitochondrial antioxidants that target oxidative stress and cellular ageing. Additional actives (hyaluronic acid, vitamin E, and nicotinamide) further support hydration, even skin tone, and barrier function.

Designed to improve:

- Fine lines and wrinkles
- Moisture retention
- Skin firmness
- Hyperpigmentation

Equiv. to 338g
of Matsutake

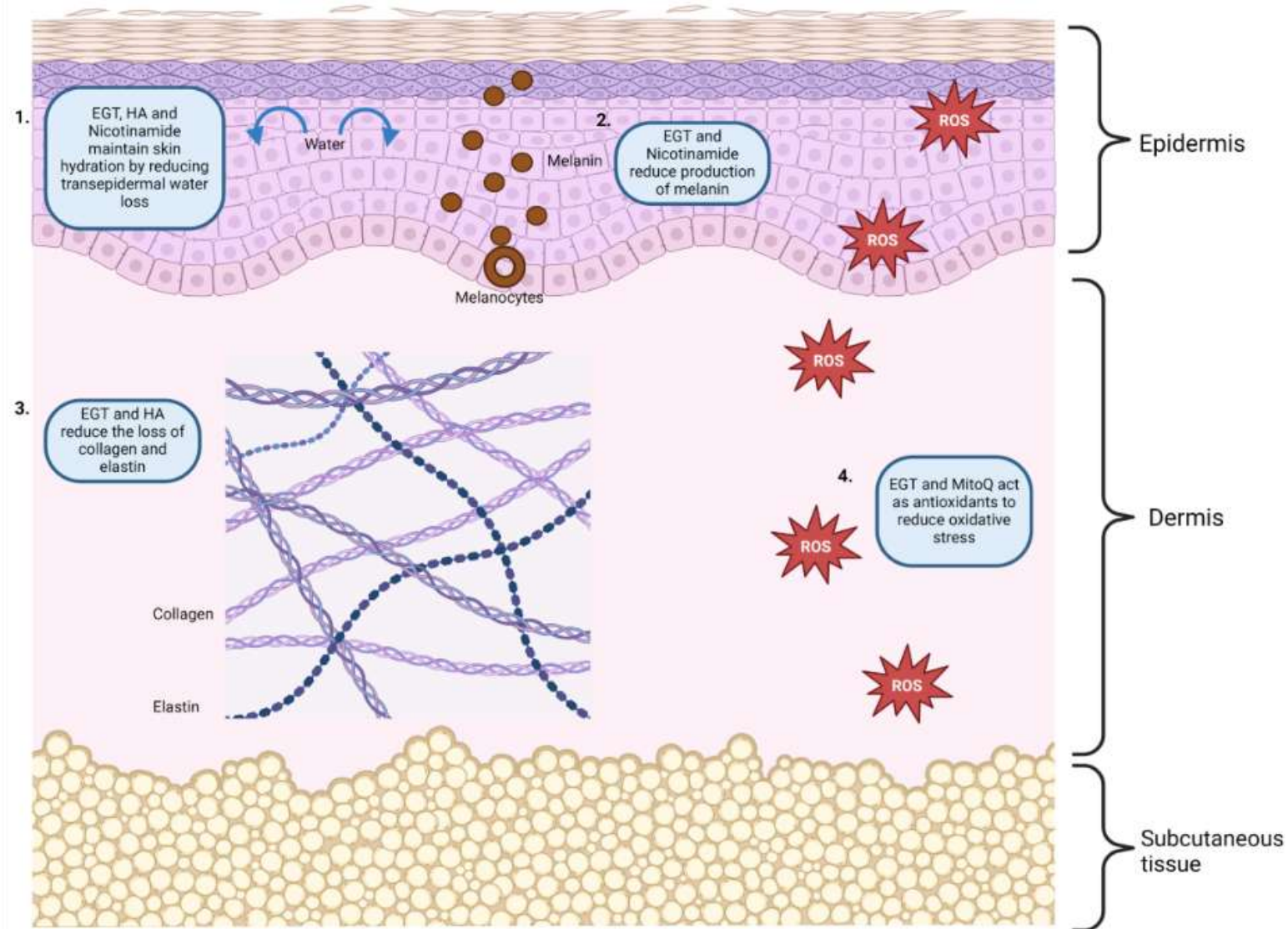


60 caps/bottle, 2 caps/serving

MitoQ® Mitoquinol Mesylate	10mg
MitoPrime Ergothioneine	25mg
Hyalauronic Acid	120mg
Nicotinamide	50mg
Vitamin E	15mg

Derma Elite Mechanisms

1. Hydration and barrier support
2. UV protection and repair
3. Collagen and skin elasticity
4. Oxidative stress defence



Consumer Test: Derma Elite Single Arm Study

Test Methodology

- Test subjects' skin condition and track changes in appearance to evaluate the efficacy of taking MitoQ Derma Elite for 28 and 56 days
- Main outcomes: skin hydration, skin clarity, wrinkle depth, pigmentation

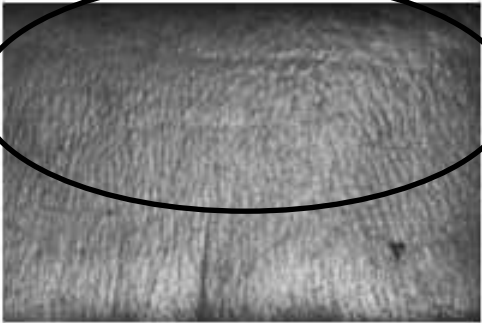
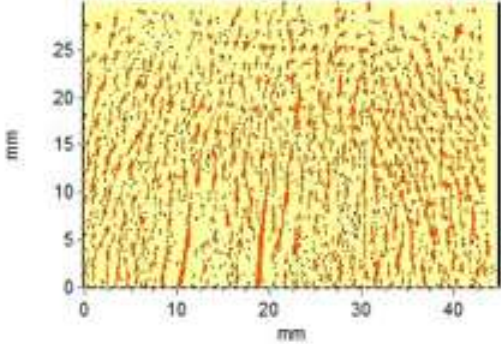
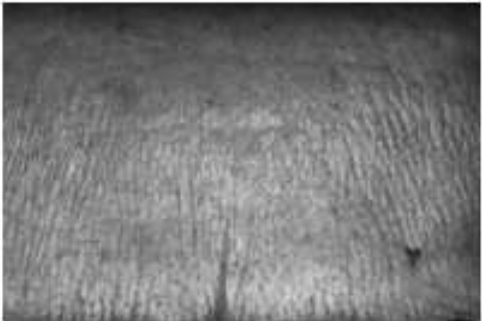
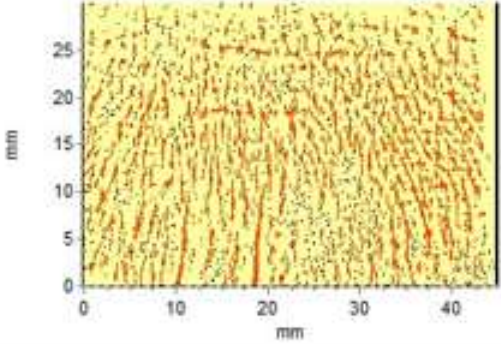
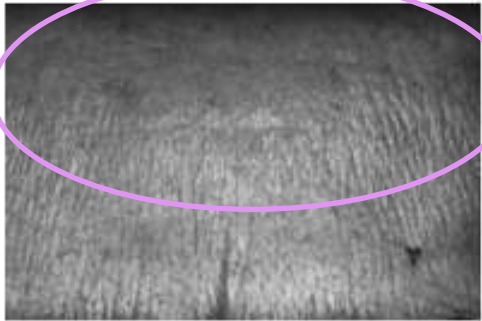
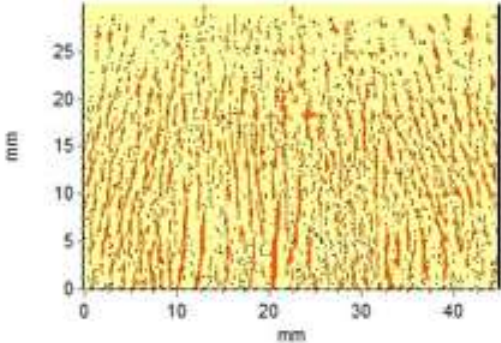


Test Subjects

- Recruitment of 45 subjects age 40-60 y.o. in Shanghai (both female and male), final evaluation (I.T.T.) n=34


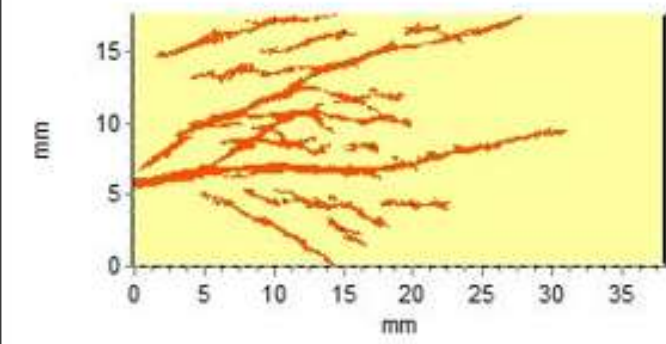

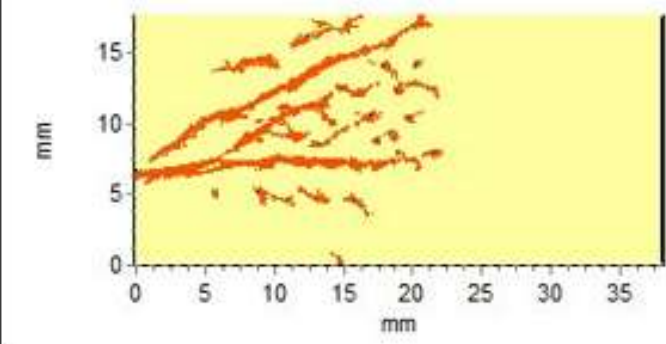

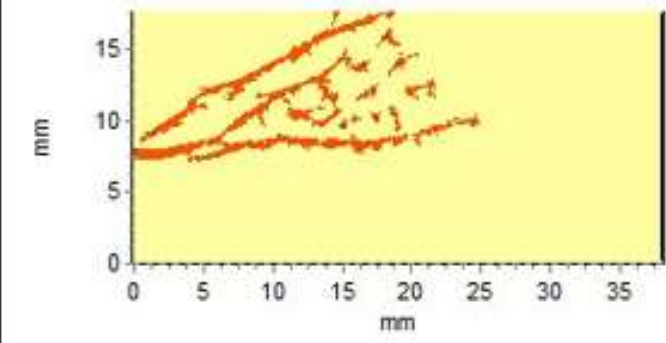
Reducing
forehead
wrinkles by
43%



Day	Facial Scan	PRIMOS	Average score	Δ vs Day 0
Day 0			559	
Day 28			343	- 38.64%
Day 56			326	- 43.47%


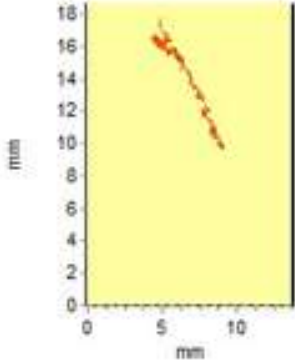

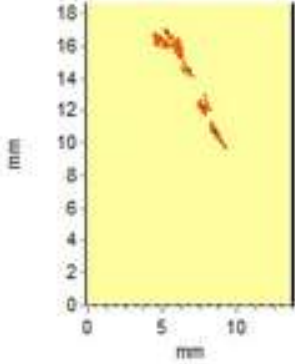

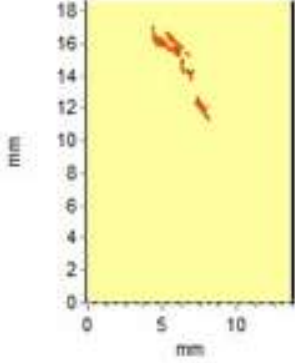
Reducing
crows feet
by 48%



Day	Facial Scan	PRIMOS	Average score	Δ vs Day 0
Day 0			319	
Day 28			163	- 48.9%
Day 56			164	- 48.59%




Reducing
smile lines
by 42%



Day	Facial Scan	PRIMOS	Average score	Δ vs Day 0
Day 0			356	
Day 28			208	- 41.57%
Day 56			204	- 42.7%

Reducing
spots by 9%

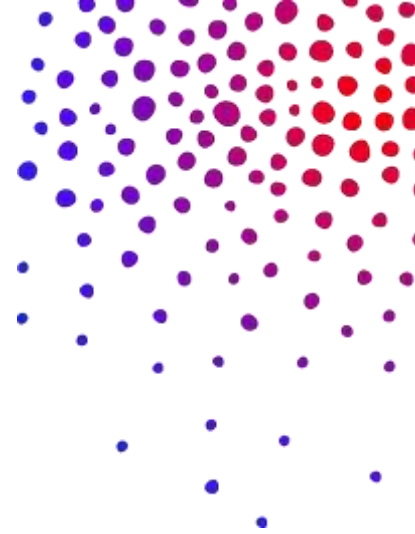


Day	Spots under <u>Visia CR</u>	AREA % AVERAGE	Δ vs Day 0
Day 0		36.2	
Day 28		33.31	-9.04%
Day 56		33.24	-9.23%

Main Outcomes after 28 days of Derma Elite

- Increased skin thickness by 17%
- Increased skin elasticity by 173% and firmness by 15%
- Reduced wrinkles/fine lines by up to 48%
 - lateral canthal wrinkles by 48%,
 - nasolabial folds by 41%,
 - forehead lines by 38%
- Increase the moisture retention by 22%

Note: Data from third party testing agency, 34 subjects among 40-60y.o. took Derma Elite and tested by derma device at certain date under same condition, the actual efficacy may vary from person to person.



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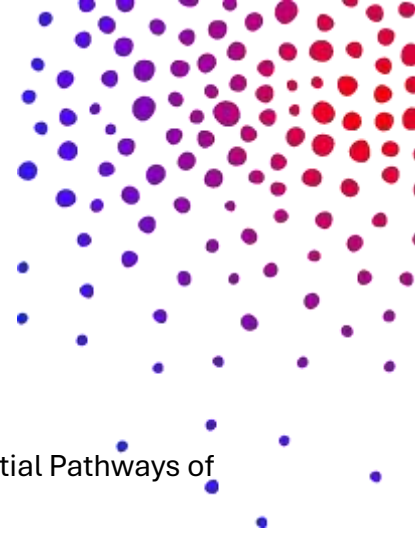
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References



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2. Liu, H. M., Tang, W., Wang, X. Y., Jiang, J. J., Zhang, W., & Wang, W. (2023). Safe and Effective Antioxidant: The Biological Mechanism and Potential Pathways of Ergothioneine in the Skin. *Molecules (Basel, Switzerland)*, 28(4), 1648. <https://doi.org/10.3390/molecules28041648>
3. Cheng D, Fei W, Zhang Y, Xu Q. The Effects of L-ergothioneine on Skin Hydration, Elasticity, Brightening, Anti-carbonylation and Anti-glycation: A Single Center, Open Label Pilot Study. *Current trends on biotechnology and microbiology*. 2022 Nov; 3 (2): 559-565
4. Victorelli, S., Lagnado, A., Halim, J., Moore, W., Talbot, D., Barrett, K., Chapman, J., Birch, J., Ogrodnik, M., Meves, A., Pawlikowski, J. S., Jurk, D., Adams, P. D., van Heemst, D., Beekman, M., Slagboom, P. E., Gunn, D. A., & Passos, J. F. (2019). Senescent human melanocytes drive skin ageing via paracrine telomere dysfunction. *The EMBO journal*, 38(23), e101982. <https://doi.org/10.15252/emj.2019101982>
5. Choi, W. S., Mitsumoto, A., & Kochevar, I. E. (2009). Involvement of reactive oxygen species in TGF-beta1-induced tropoelastin expression by human dermal fibroblasts. *Photochemistry and photobiology*, 85(6), 1425–1433. <https://doi.org/10.1111/j.1751-1097.2009.00611.x>
6. Fisher, G. J., Quan, T., Purohit, T., Shao, Y., Cho, M. K., He, T., Varani, J., Kang, S., & Voorhees, J. J. (2009). Collagen fragmentation promotes oxidative stress and elevates matrix metalloproteinase-1 in fibroblasts in aged human skin. *The American journal of pathology*, 174(1), 101–114. <https://doi.org/10.2353/ajpath.2009.080599>
7. Li, Y., Dong, T., Yang, F., Jin, S., Xiong, R., Song, X., & Guan, C. (2024). MitoQ enhances CYP19A1 expression to stimulate WNT/ β -catenin signaling pathway for promoting hair growth in androgenetic alopecia. *European journal of pharmacology*, 985, 177094. <https://doi.org/10.1016/j.ejphar.2024.177094>