ImDerma LABORATORIES

Patent Pending

Imdermalab® X-RESVERATROL

NEXT GENERATION INTRACELLULAR DELIVERY TECHNOLOGY

X

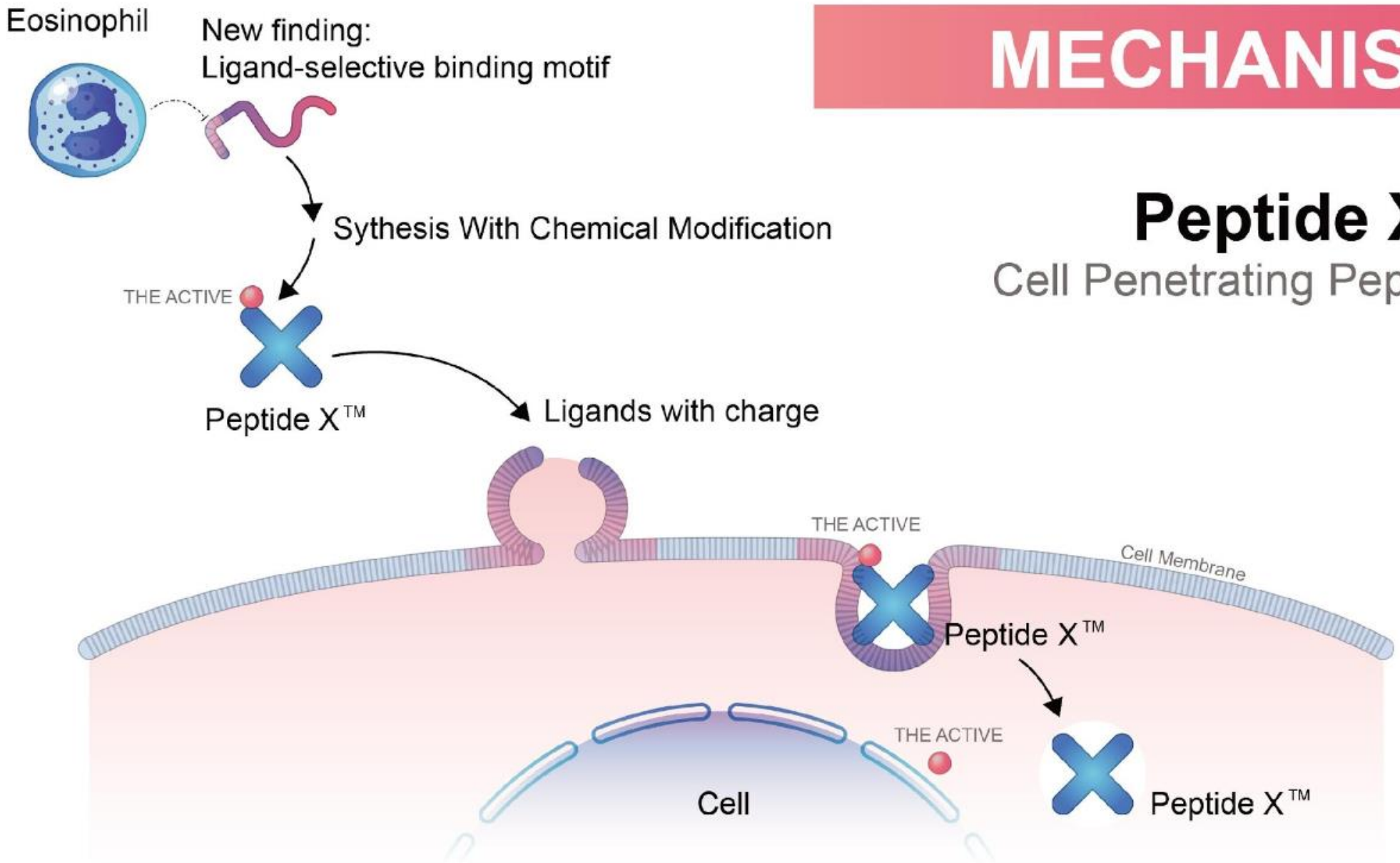
Powerful Antioxidant polyphenol
Brightening and spot lightening.
Lengthen the cell lifespan. *

* Nature. 2003 Sep 11;425(6954);191-6. doi: 10.1038/nature01960. Epub 2003 Aug 24.
Small molecule activators of sirtuins extend Saccharomyces cerevisiae lifespan

MECHANISM

Peptide X™

Cell Penetrating Peptide



Imdermalab® Peptide X, INTRACELLULAR DELIVERY SYSTEM

Potential Carrier for Actives within 15 Minutes

The experiment result from fluorescent microscope, Imdermalab® X-peptide intracellular delivery system can carry actives across cell membranes and into skin cells by internalization within 15 minutes effectively.

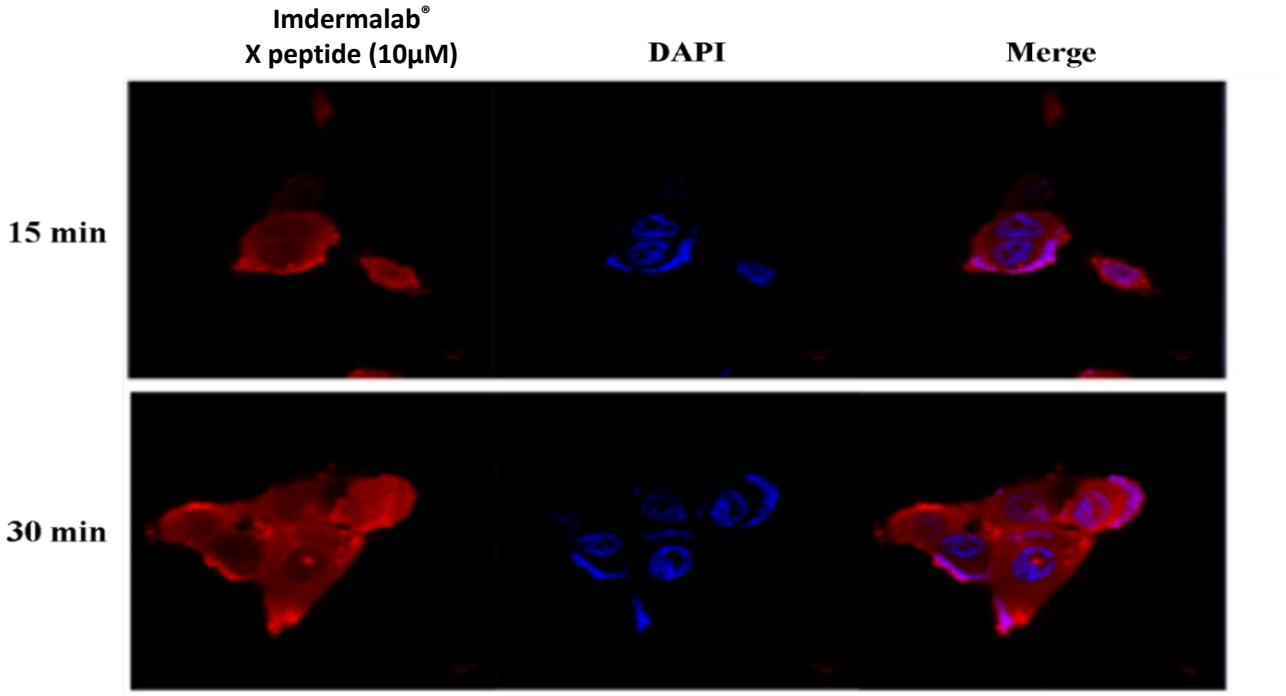


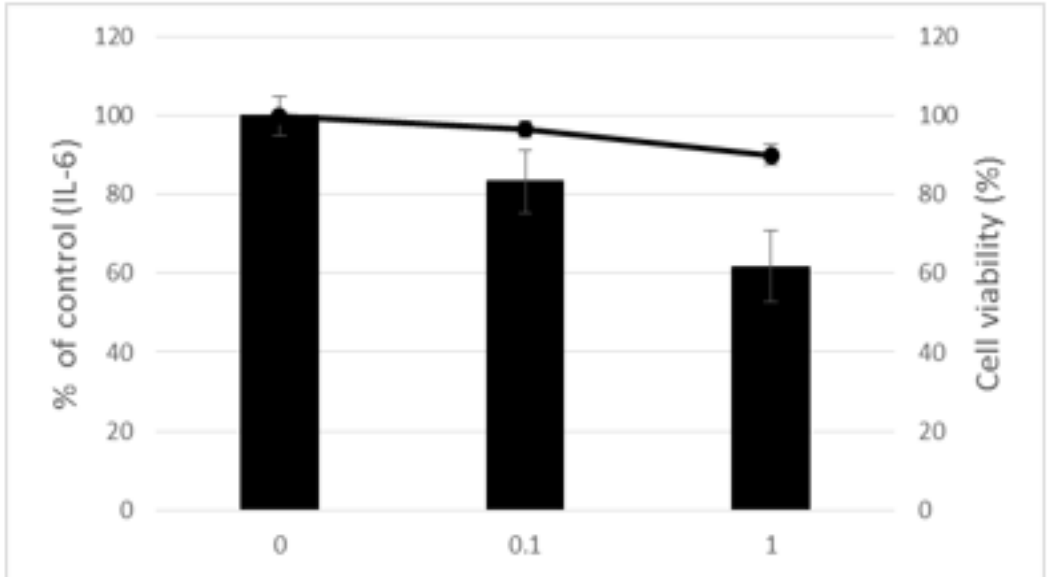
Fig. Examination of TMR-X internalization by keratinocytes

- Approach: examine the penetration of TMR-X in HaCaT cells
- Cell line: HaCaT
- Peptide concentration: 10 μM TMR-GBP
- Time: 15 and 30 min
- Red: TMR; Blue: nuclear staining wth DAPI
- Confocal microscopy

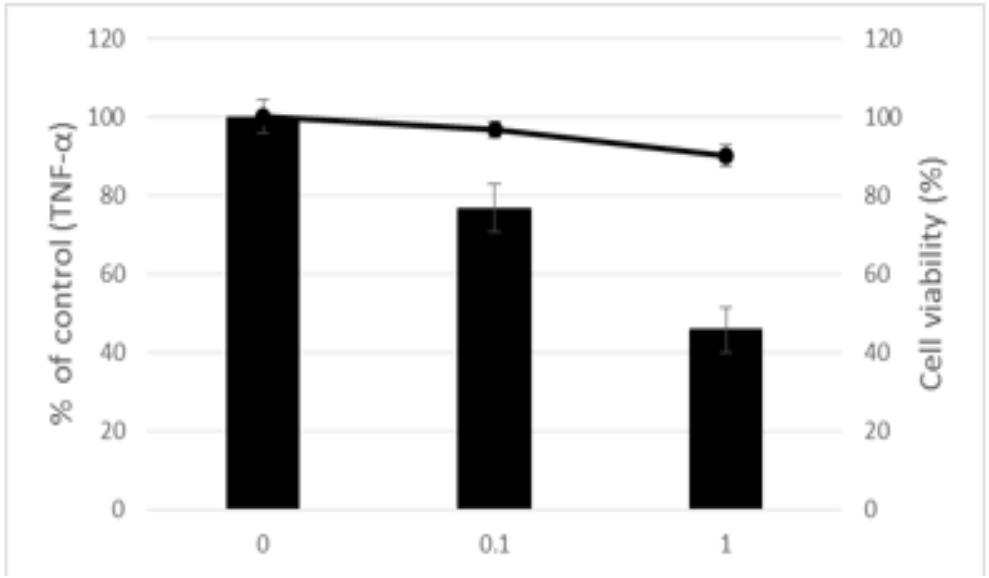
Imdermalab® Peptide X

Anti-inflammation

Experimental results showed that Imdermalab® X-peptide intracellular delivery system has immune modulating effect of inhibiting IL-6 、TNF-α and reducing inflammatory response.



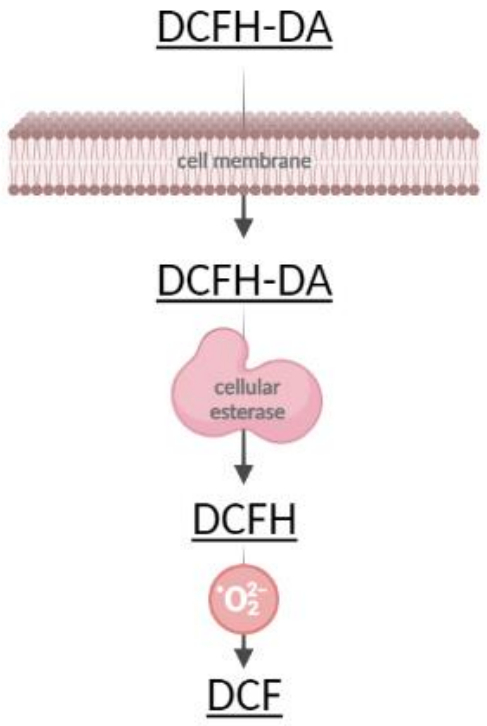
Inhibition of IL-6 (μM)

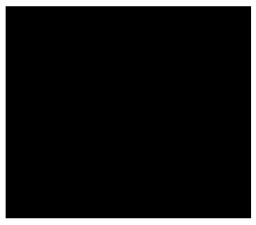


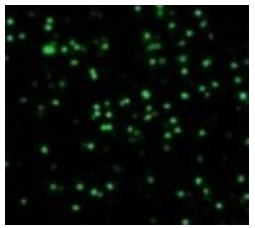
Inhibition of TNF-α (μM)

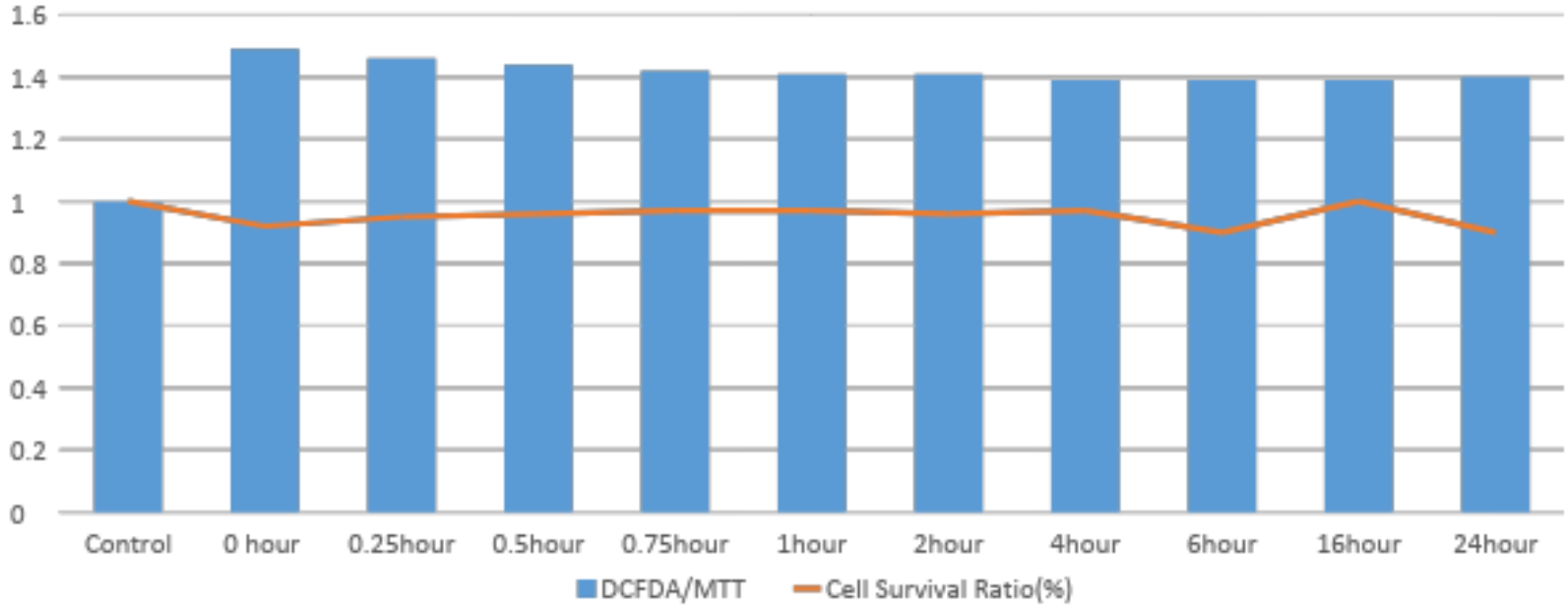
Imdermalab® Peptide X, INTRACELLULAR DELIVERY SYSTEM

Peptide X without significant oxidative effect and safe to cell.



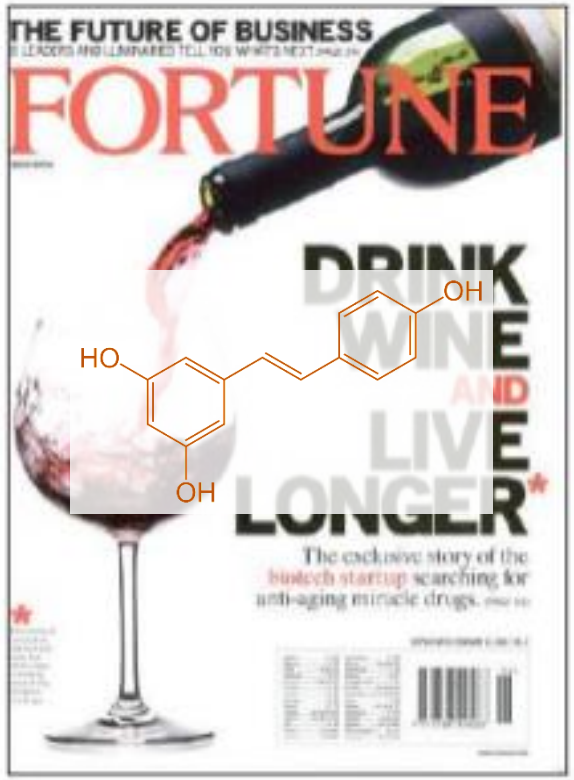






TIME(min)	-	-	15	30	45	60	120	240	360	960	1440
Peptide X(μM)	-	-	1								
H2O2(mM)	-	1.2									
DCFDA/MTT	1	1.490204	1.469297	1.446781	1.425776	1.412788	1.418709	1.398411	1.39093	1.397315	1.407622
Cell Survival Ratio(%)	100	91.74767	95.26124	96.34467	97.91414	97.84326	96.20292	96.95221	90.0567	100.2126	90.9275

ABOUT RESVERATROL



Anti-oxidant

Resveratrol exhibited stronger anti-radical activity than kaempferol and is more efficient than α-tocopherol Resveratrol was found to be stronger antioxidant than catechin and kaempferol

Source:
K L Khandujja et al: Stable free radical scavenging and anti oxidative properties of resveratrol - Indian Journal of Biochemistry & Biophysics Vol. 40, December 2003, pp. 416-422

Brightening

Resveratrol: Inhibitor to Tyrosinase

Source:
Bernard P. and Berton J.-Y., IJoCS, 22, 219-226 (2000)

Cell Lifespan

The potent activator **resveratrol**, a polyphenol found in red wine, lowers the Michaelis constant of SIRT1 for both the acetylated substrate and NAD(+), and increases cell survival by stimulating SIRT1-dependent deacetylation

Source:
Nature. 2003 Sep 11;425(6954);191-6. doi: 10.1038/nature01960. Epub 2003 Aug 24.
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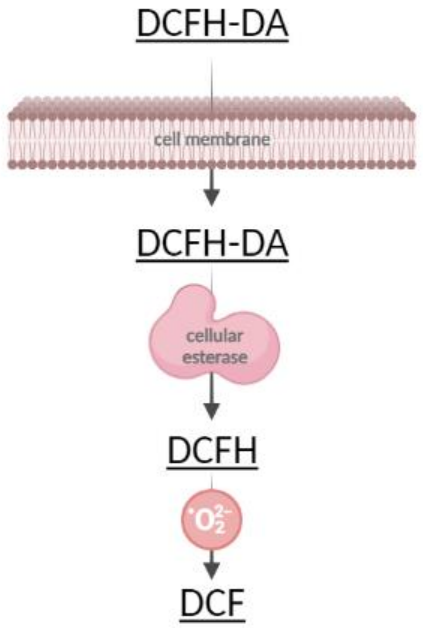
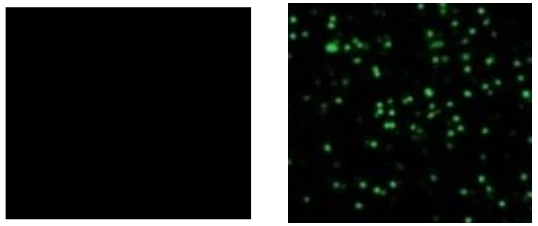
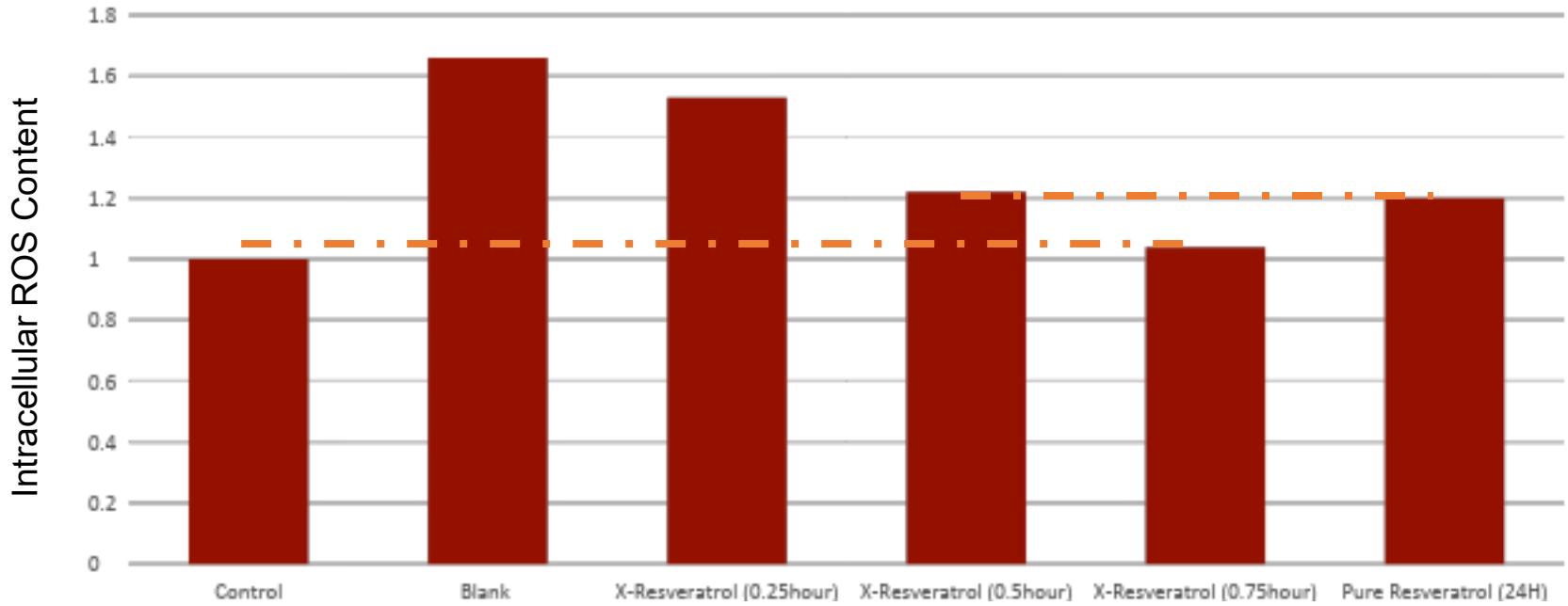
Imdermalab® X-Resveratrol, Intracellular Anti-oxidant Ability Test

X-Resveratrol anti-oxidation capability is 48 times greater than Resveratrol alone!







Imdermalab® X-Resveratrol

In-Vivo

Cosmetic Safety and Efficacy Lab., Aurum Biotech. Co.

Purpose:

To evaluate the effectiveness of spot lightening, skin gloss enhancement, and melanin content reduction by serum samples prepared with 1% Imdermalab® X-Resveratrol comparing with Resveratrol alone.

Study Conditions:

Sex: female

Subject: with 10 Asian race of age 30-60 years old

Test Time: D0, D14, D28

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Imdermalab® X-Resveratrol

In-Vivo

Cosmetic Safety and Efficacy Lab., Aurum Biotech. Co.

Spot	Apply twice daily on face (2mg/cm^2) for 4 weeks.	C+K VisioFace® RD, Germany
Skin Gloss		Zehntner Glossmeter, Switzerland
Melanin Content		C+K Mexameter, Germany

Imdermalab® X-Resveratrol

In-Vivo

Day 0

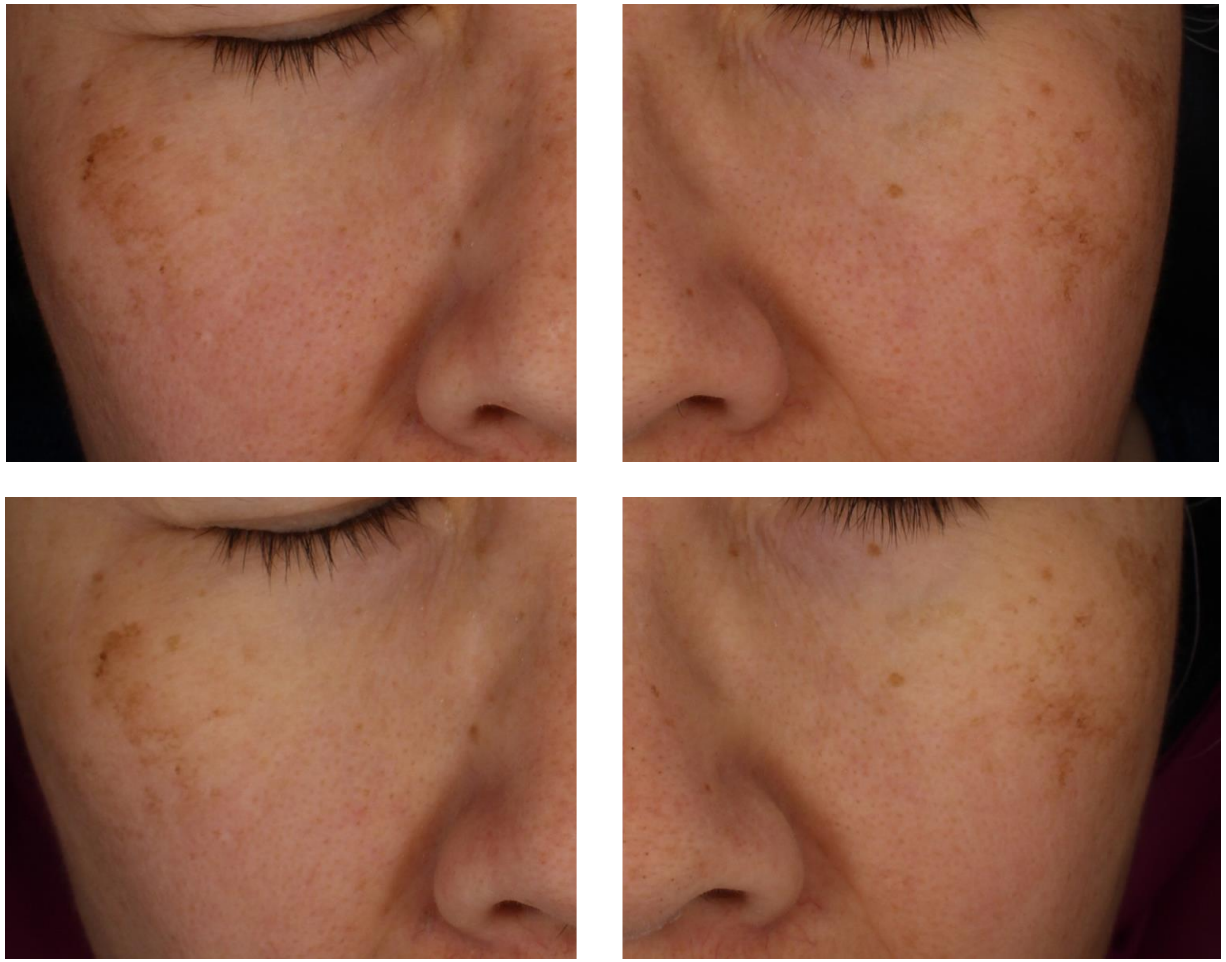
Day 28

Resveratrol

X-Resveratrol

Imdermalab® X-Resveratrol

In-Vivo



Day 0

Day 28

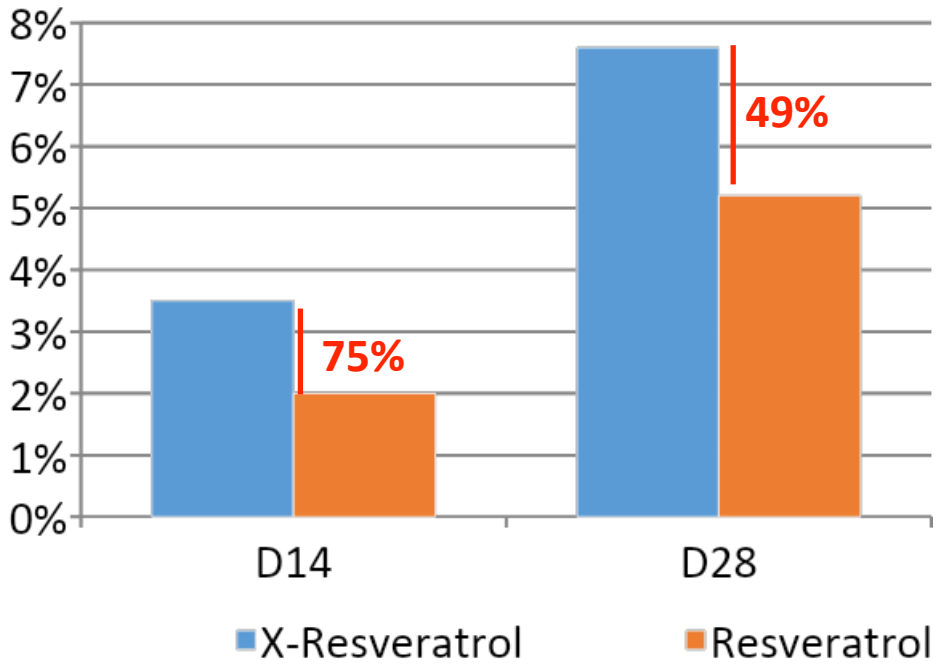
Resveratrol

X-Resveratrol

Imdermalab® X-Resveratrol

In-Vivo

Compare to Resveratrol alone, the evaluation of *in-vivo* test result of 1% Imdermalab® X-Resveratrol showed more positive improvement including spot lightening, skin gloss and melanin content in **2 weeks**.



Spot Lightening Efficacy Test

X-Resveratrol							
Mean	**SD**	RSD	Spooled	t-value	Probability	Sig. Diffe.	Improvement
4029.8	**504.5**	13%	Baseline	Baseline	Baseline	Baseline	Baseline
3887.5	**524.8**	13%	514.71	0.8743	0.3935	**No**	**3.5%**
3722.6	**475.7**	13%	490.31	1.9813	0.0630	**No**	7.6%

Resveratrol							
Mean	**SD**	RSD	Spooled	t-value	Probability	Sig. Diffe.	Improvement
4082.1	**556.6**	14%	Baseline	Baseline	Baseline	Baseline	Baseline
4002.3	**541.0**	14%	548.81	0.4598	0.6512	**No**	**2.0%**
3873.7	408.4	11%	488.13	1.3501	0.1937	**No**	5.1%

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Imdermalab® X-Resveratrol

In-Vivo

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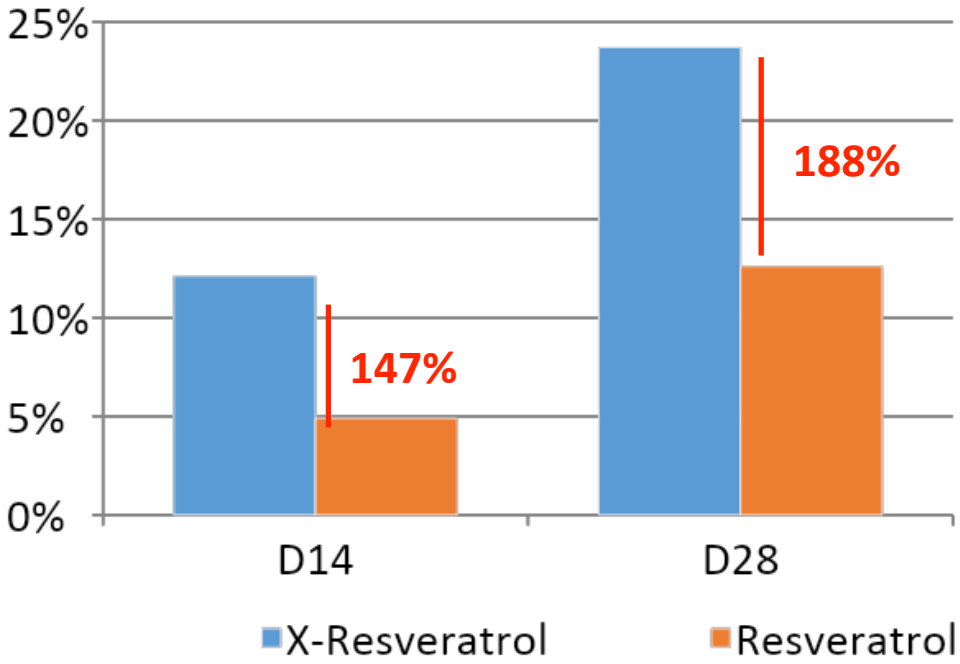

Skin Gloss Efficacy Test

X-Resveratrol							
Mean	**SD**	RSD	Spooled	t-value	Probability	Sig. Diffe.	Improvement
2.07	**0.59**	29%	Baseline	Baseline	Baseline	Baseline	Baseline
2.32	**0.48**	21%	0.54	1.4629	0.1607	**No**	**12.1%**
2.56	**0.41**	16%	0.51	3.0308	0.0072	**Yes**	**23.7%**

Resveratrol							
Mean	**SD**	RSD	Spooled	t-value	Probability	Sig. Diffe.	Improvement
2.06	**0.58**	28%	Baseline	Baseline	Baseline	Baseline	Baseline
2.16	**0.44**	20%	0.52	0.6131	0.5475	**No**	**4.9%**
2.32	**0.42**	18%	0.51	1.6125	0.1242	**No**	**12.6%**

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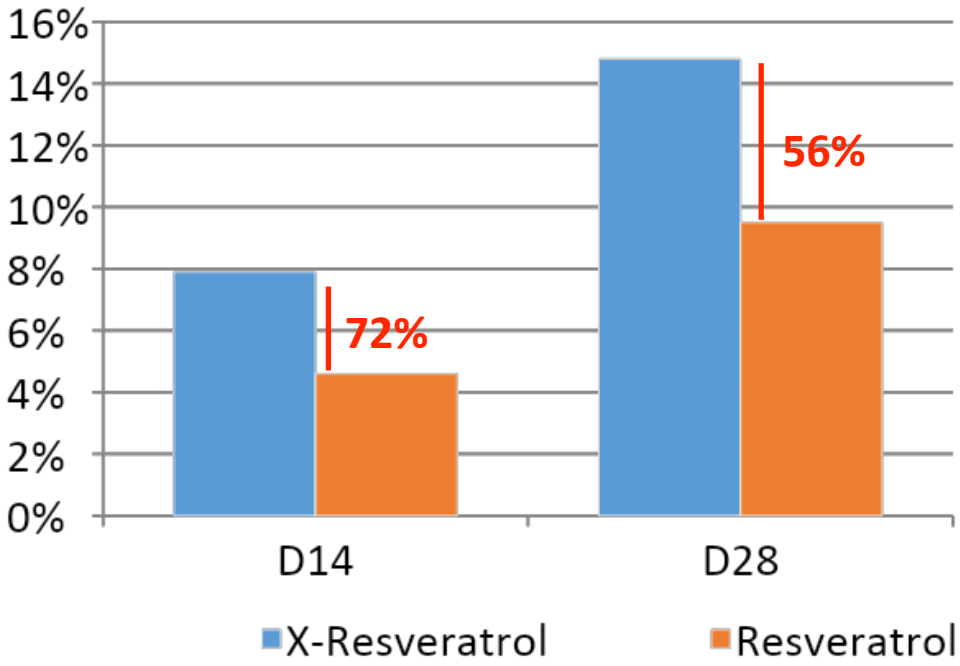
Imdermalab® X-Resveratrol

In-Vivo

Compare to Resveratrol alone, the evaluation of *in-vivo* test result of 1% Imdermalab® X-Resveratrol showed more positive improvement including spot lightening, skin gloss and melanin content in **2 weeks**.



Melanin Content Test

X-Resveratrol							
Mean	**SD**	RSD	Spooled	t-value	Probability	Sig. Diffe.	Improvement
120.0	**15.9**	13%	Baseline	Baseline	Baseline	Baseline	Baseline
110.5	**17.7**	16%	16.83	1.7854	0.0911	**No**	**7.9%**
102.3	**13.6**	13%	14.82	3.7765	0.0014	**Yes**	**14.8%**
Resveratrol							
Mean	**SD**	RSD	Spooled	t-value	Probability	Sig. Diffe.	Improvement
119.5	**14.9**	13%	Baseline	Baseline	Baseline	Baseline	Baseline
114.0	**15.6**	14%	15.25	1.1402	0.2691	**No**	**4.6%**
108.1	**14.9**	14%	14.94	2.4137	0.0267	**Yes**	**9.5%**

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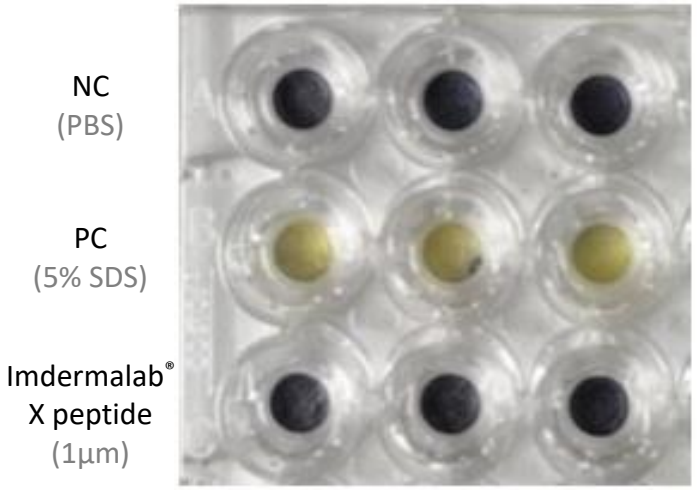
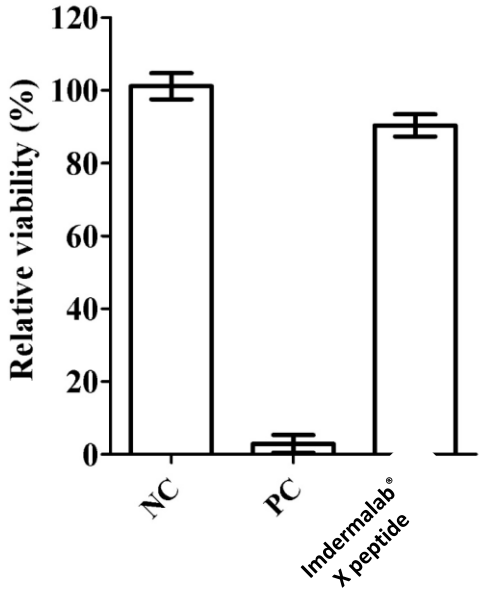
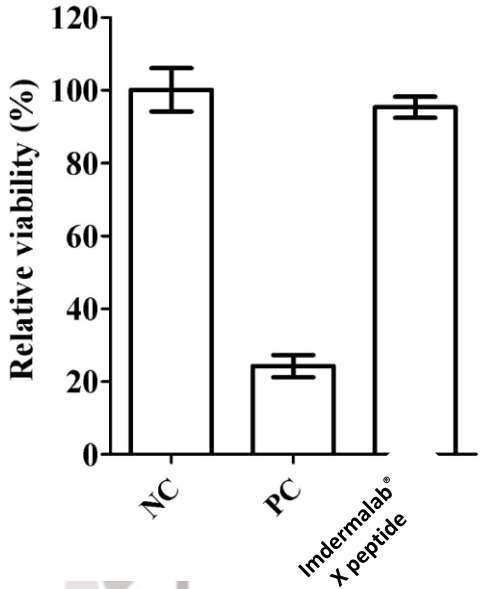
Imdermalab® X-Resveratrol

Safe to use on skin

Non-irritant and non-sensitizer according to OECD TG 439 & 442C guidelines standard.







Imdermalab® X-Resveratrol

Product Information

INCI NAME	**Niacinamide (and) Resveratrol (and) sh-Decapeptide-5 SP**
Appearance	Ivory white powder *might be with light brown particles.
Formulation	– Optimal pH range from 4 to 5.5 in formulations – Exposure of the final formulations to direct sun light should be avoided (use opaque packaging) – The addition of UV filters is recommended for day care products
Dosage	0.5%~3%

Imdermalab® X-Resveratrol

Formulation Guide – Skin Brightening Serum

Phase	Trade Name	INCI-Name	% w/w
A	Water	Water	20
	Xanthan Gum	Xanthan Gum	0.2
	1,3 Butylene glycol	1,3 Butylene glycol	1
B	Water	Water	59.6
	Citric Acid	Citric Acid	0.97
	Sodium Citrate	Sodium Citrate	1.03
C	Propanediol	Propanediol	5
	Imdermalab® X-RESVERATROL	Niacinamide (and) Resveratrol (and) sh-Decapeptide-5 SP	1
D	Water	Water	10
	EDTA-2Na	EDTA-2Na	0.1
	Allantoin	Allantoin	0.1
E	Imdermalab®Guard 100	Propanediol (and) 1, 2-Hexanediol (and) Caprylhydroxamic Acid	1
		Tatol	100

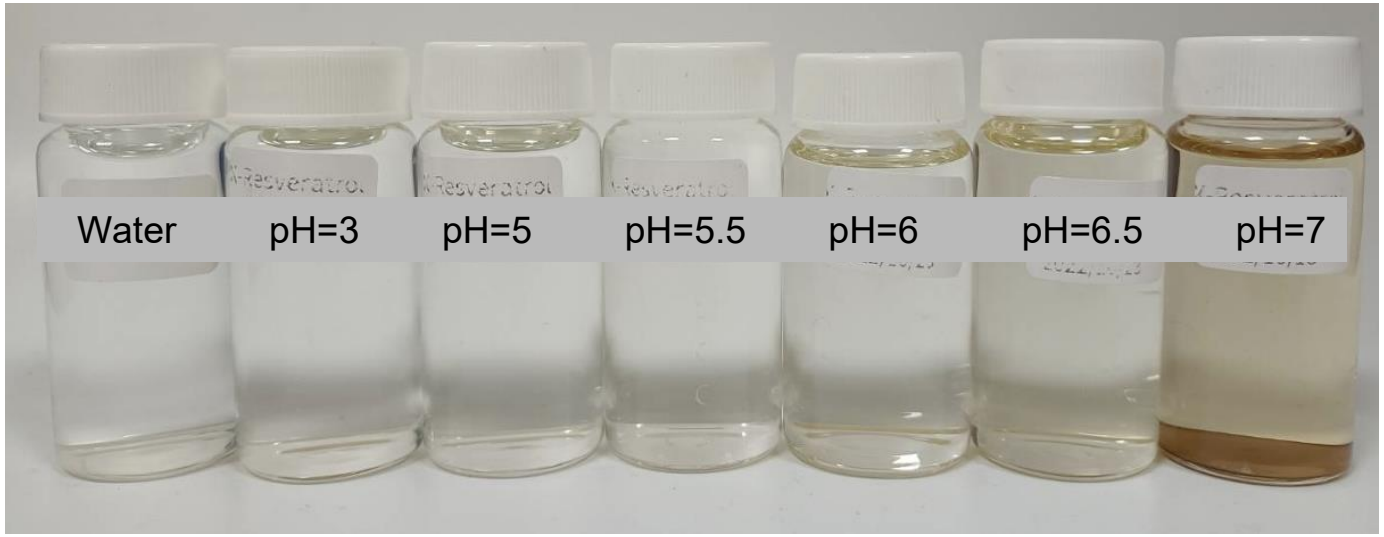
Pre-dissolve the Imdermalab X-Resveratrol in Propanediol or other seleted polyol.

Contains
1% Imdermalab® X-RESVERATROL
Solubilizer: 5% Propanediol
pH: 4.5

Imdermalab® X-Resveratrol

Stability

pH: it is suggested keeping formula at pH = 4.0 ~ 5.5



EDTA-2Na: 0.1-0.2% in the finished formula