

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



Eosinophil



New finding:
Ligand-selective binding motif



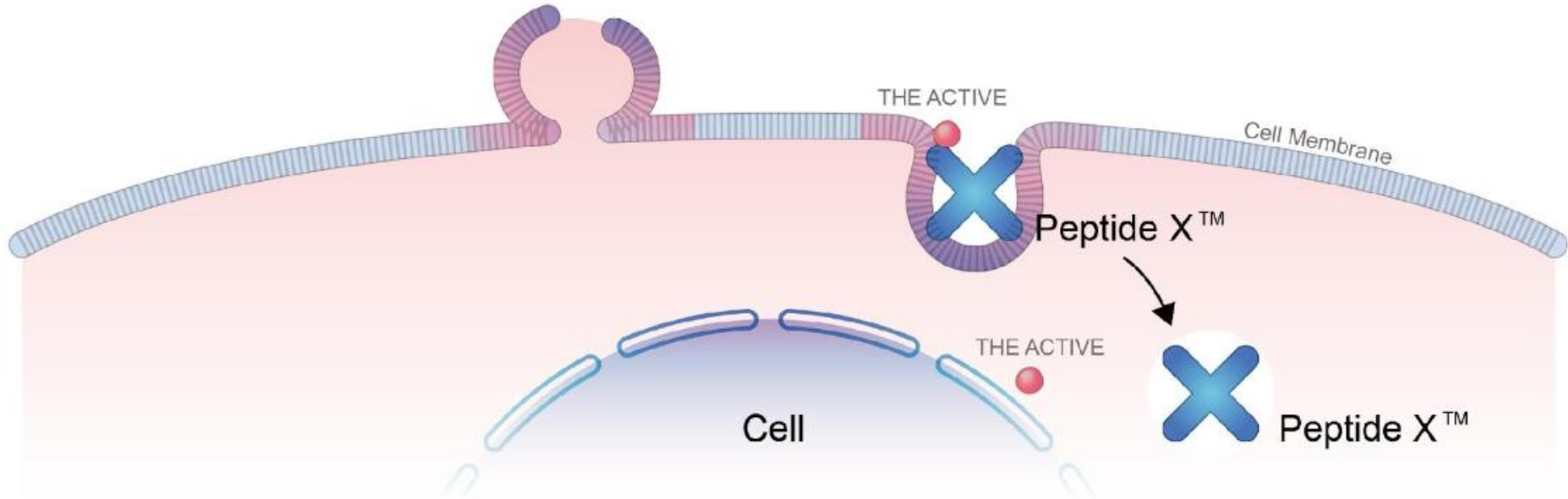
Synthesis With Chemical Modification

THE ACTIVE



Peptide X™

Ligands with charge



MECHANISM

Peptide X™

Cell Penetrating Peptide

Indermalab® Peptide X, INTRACELLULAR DELIVERY SYSTEM

Potential Carrier for Actives within 15 Minutes

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

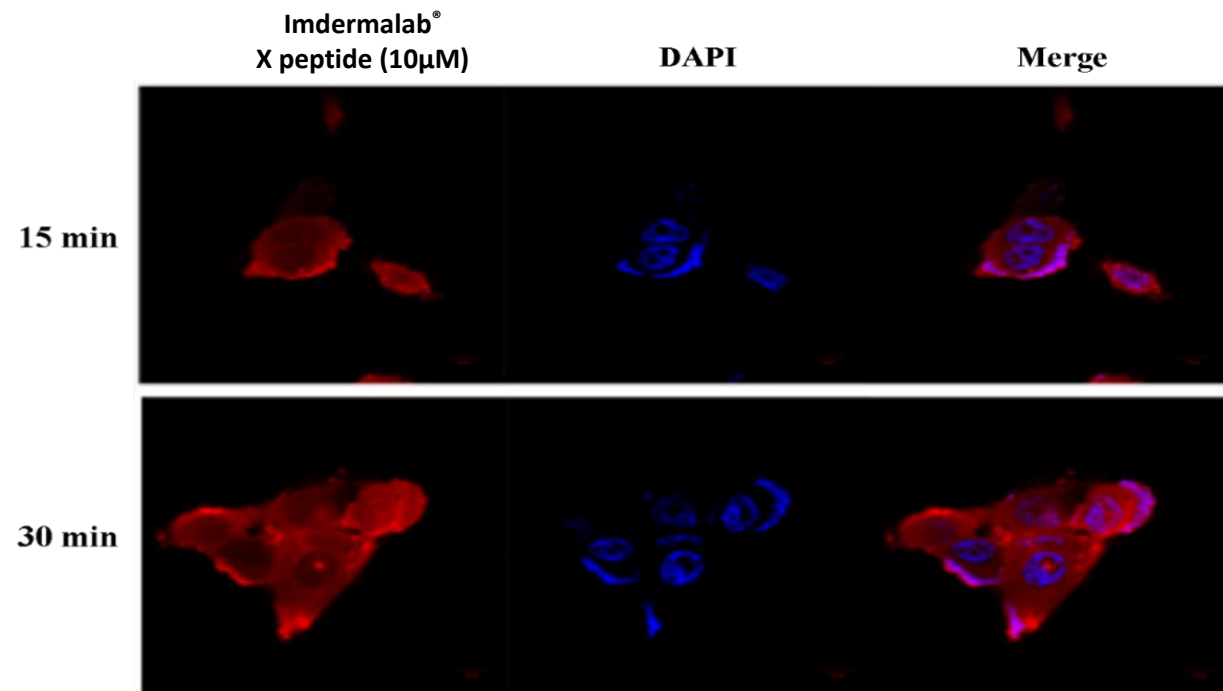


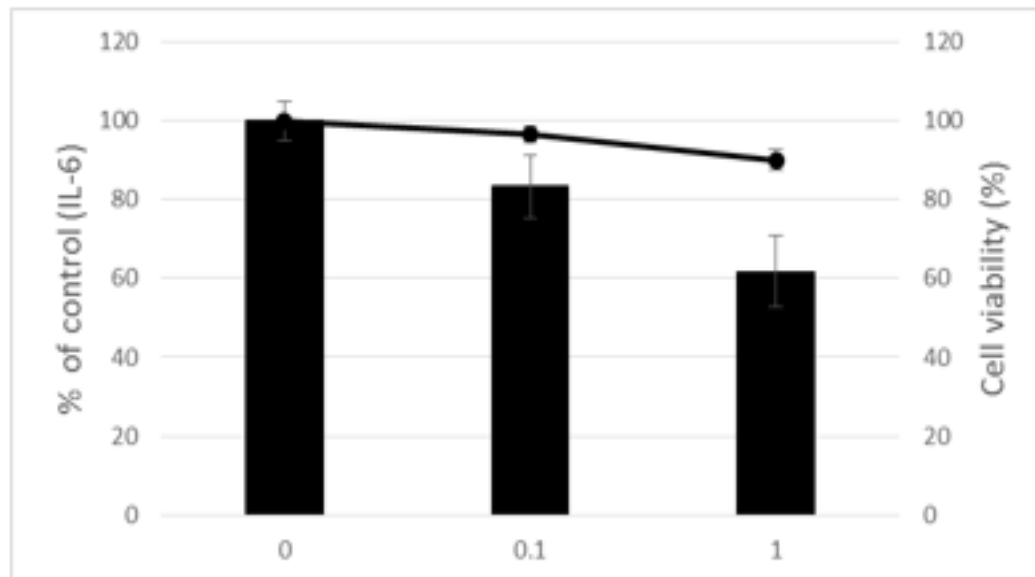
Fig. Examination of TMR-X internalization by keratinocytes

- 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 with DAPI
- Confocal microscopy

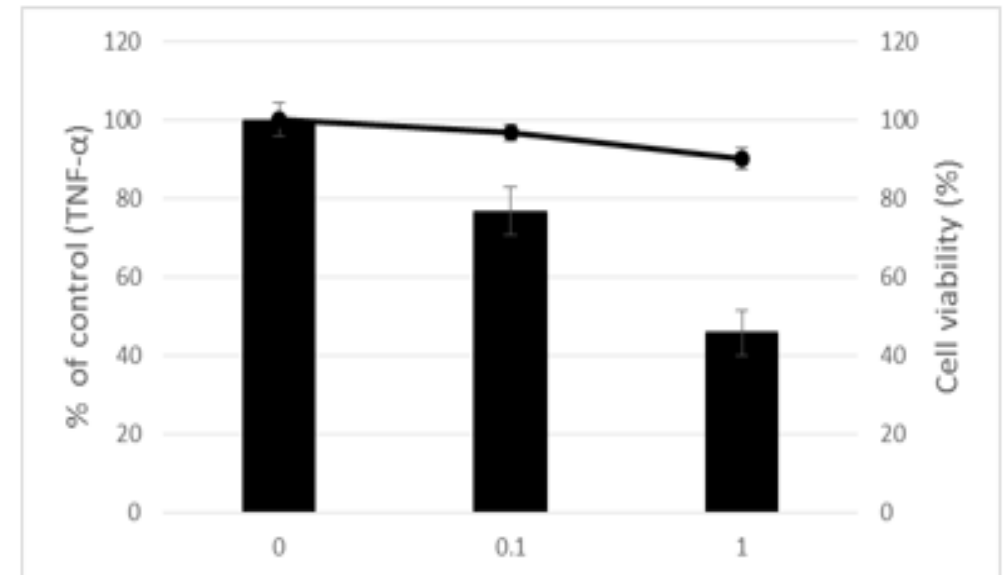
Imdermalab[®] Peptide X

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.



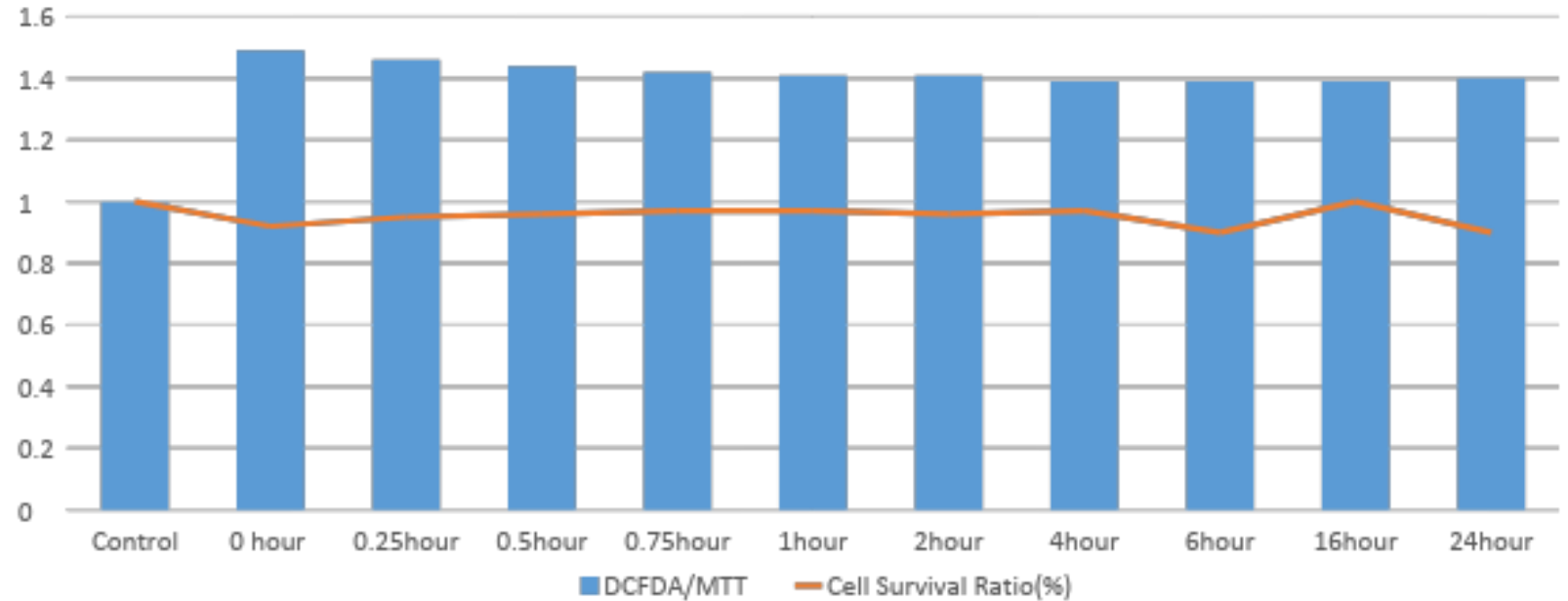
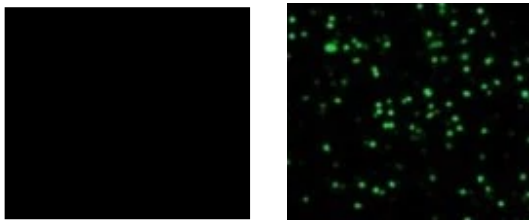
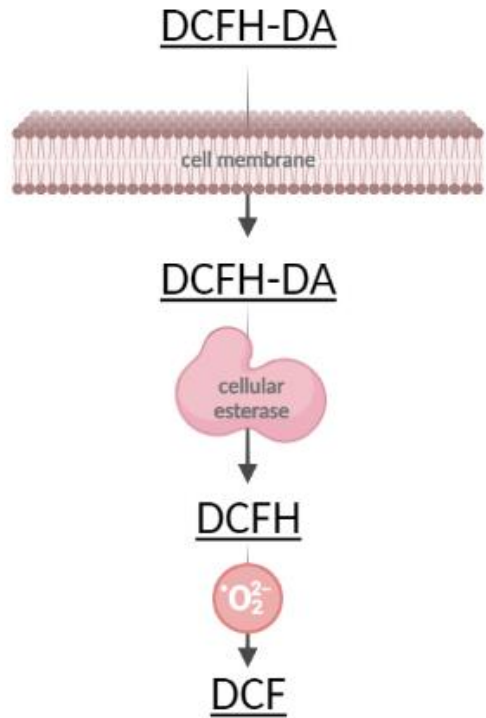
Inhibition of IL-6 (μ M)



Inhibition of TNF- α (μ M)

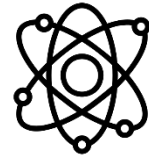
Imdermalab® Peptide X, INTRACELLULAR DELIVERY SYSTEM

Peptide X without significant oxidative effect and safe to cell.



TIME(min)	-	-	15	30	45	60	120	240	360	960	1440
Peptide X(μ M)	-	-	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 Khanduja 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)



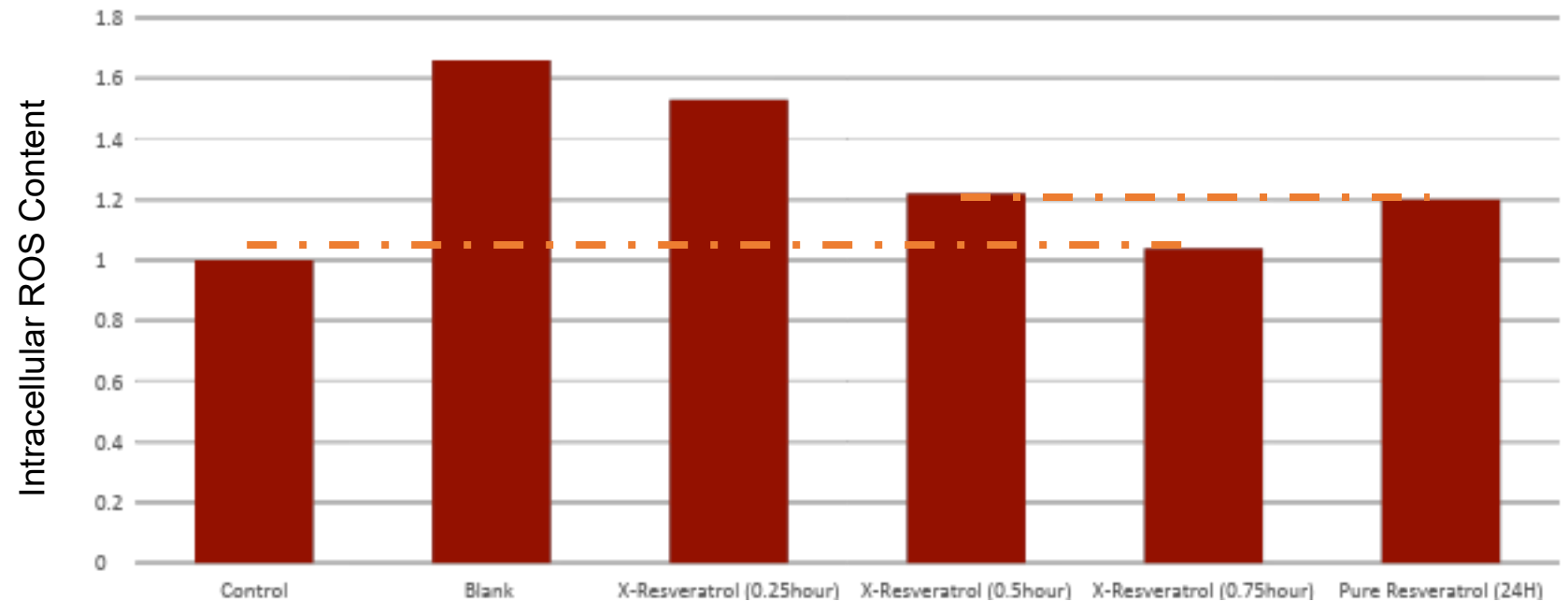
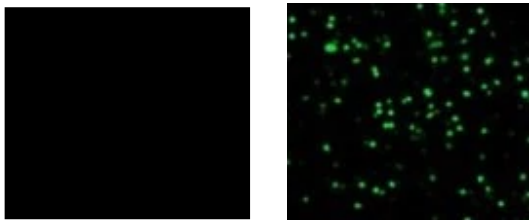
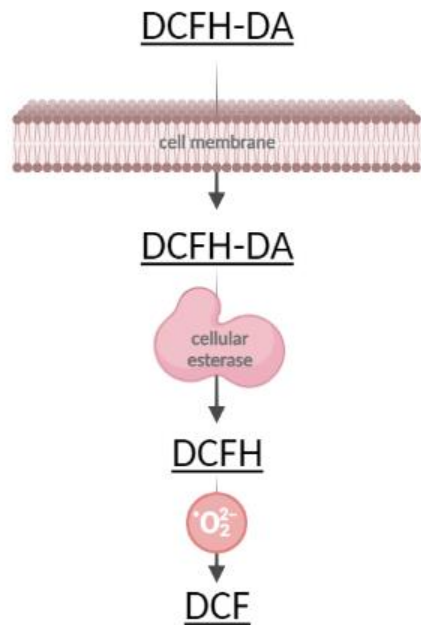
Cell Lifespan

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. Small molecule activators of sirtuins extend Saccharomyces cerevisiae lifespan

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

Imdermalab[®] X-Resveratrol

In-Vivo

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

Spot

C+K VisioFace[®] RD,
Germany

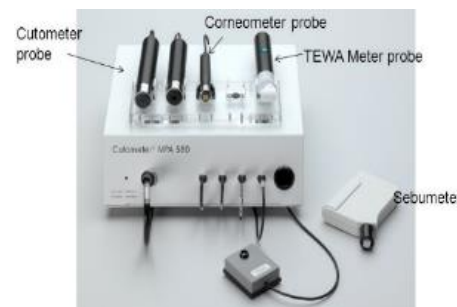
Skin Gloss

Apply twice daily on face (2mg/cm²) for 4 weeks.

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

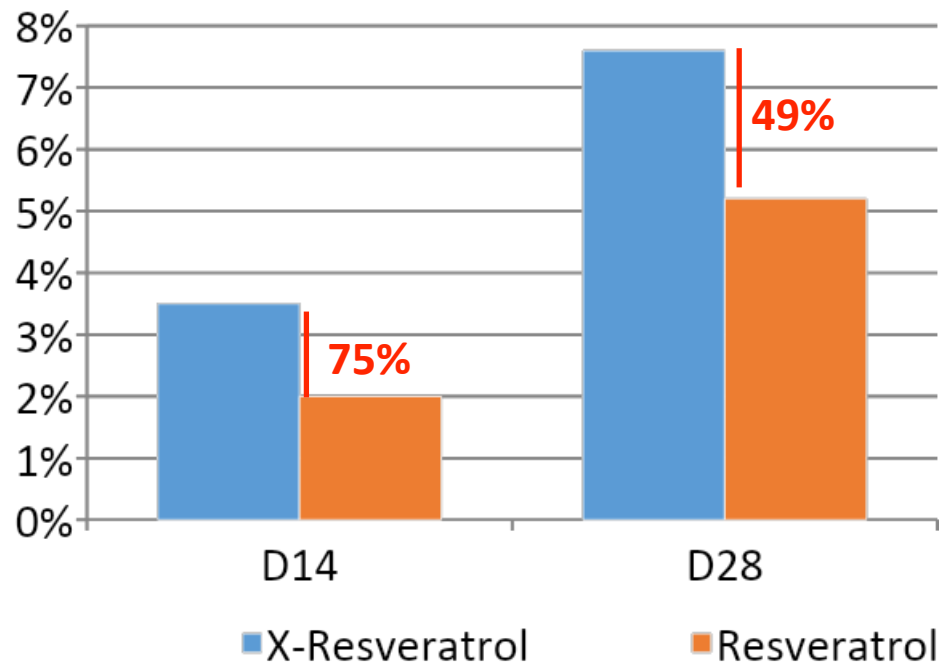
Resveratrol

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

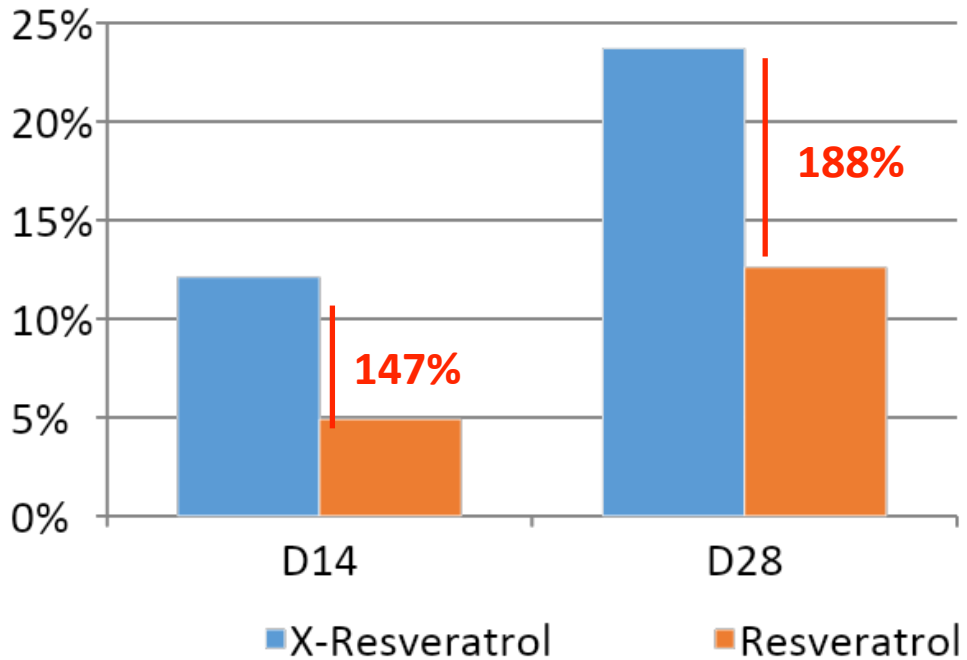
X-Resveratrol							
Mean	SD	RSD	Spooled	t-value	Probability	Sig. Diffe.	Improvement
4029.8	504.5	13%	Baseline	Baseline	Baseline	Baseline	Baseline
3887.5	524.8	13%	514.71	0.8743	0.3935	No	3.5%
3722.6	475.7	13%	490.31	1.9813	0.0630	No	7.6%

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%

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**.



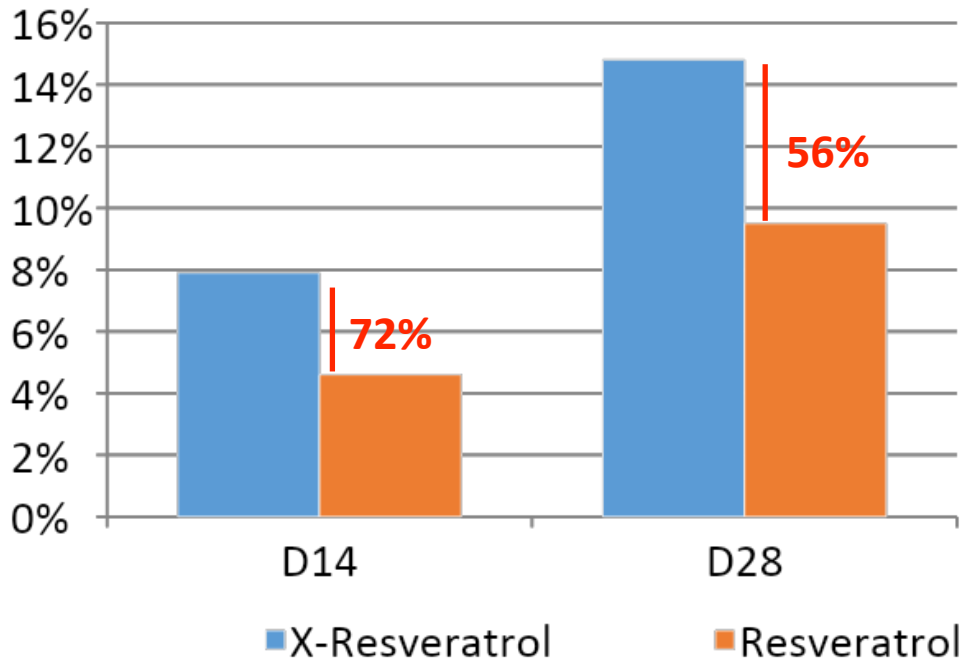
Skin Gloss Efficacy Test

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%

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**.



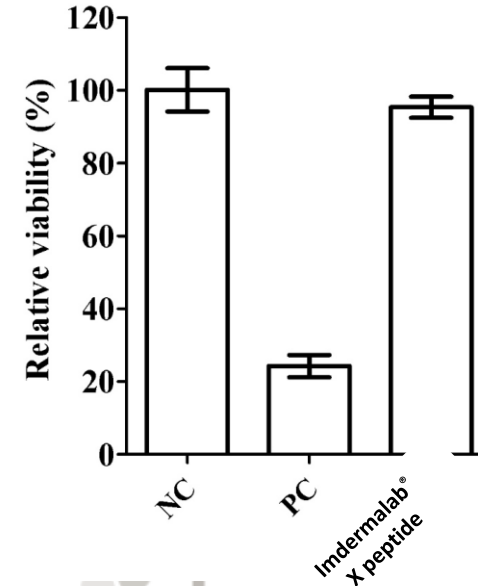
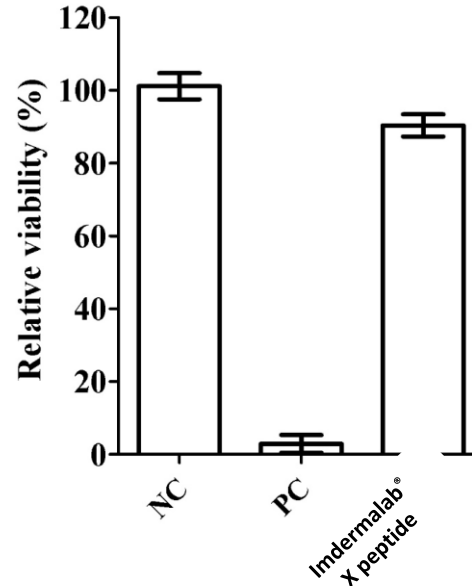
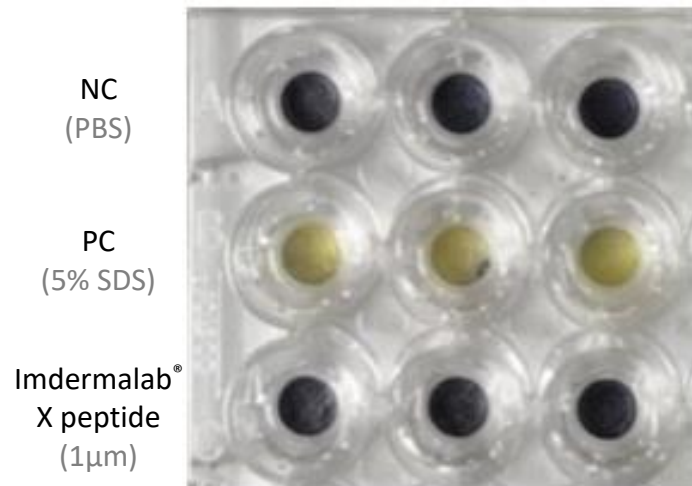
Melanin Content Test

X-Resveratrol							
Mean	SD	RSD	Spoiled	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	Spoiled	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%

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	<ul style="list-style-type: none">– 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

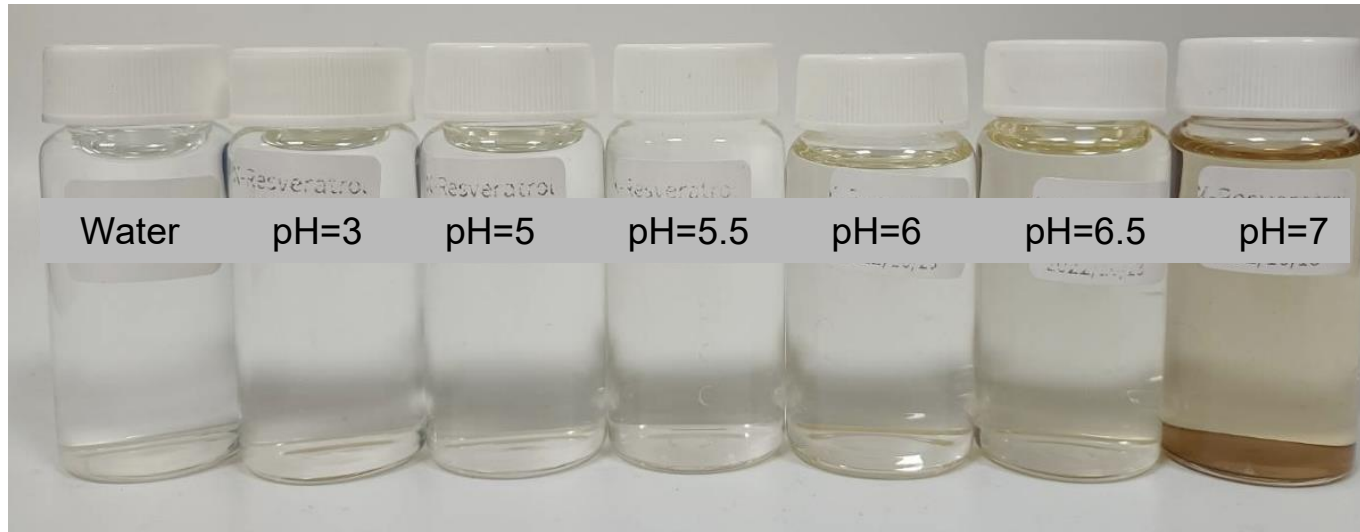
Solubilizer: 5% Propanediol

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