CIRS

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CIRS Biotech

Providing Scientific Support for the Efficacy Study of Cosmetic Ingredients and Products

About CIRS Biotech

Our in vitro evaluation center provides scientific support for cosmetic efficacies and claims for cosmetic ingredients and products. These services include the in vitro evaluation of the efficacies of cosmetic ingredients and products, in-depth research for In vitro study methods, R&D support etc.Our in vitro evaluation center provides scientific support for cosmetic efficacies and claims for cosmetic ingredients and products. These services include the in vitro evaluation of the efficacies of cosmetic ingredients and products, in-depth research for In vitro study methods, R&D support etc.

R&D Support

- Technical Support for Ingredient and Product Efficacy Improve ment and Development
- R&D Consulting Service

In Vitro Evaluation

- **Whitening**: Enzymatic Activity Assay, Melanin Experiment, Antioxidant, Anti-glycosylation
- **Anti-aging**: Anti-wrinkle, Firming, Cell Aging Model, Antioxidant, Anti-glycosylation
- **Sensitive Skin**: Moisturizing, Reliving, Repairing

- Acne Removal
- Scalp care
- Oil Control
- Exfoliating
- Skin Irritation
- Eye Irritation
- Genotoxicity
- Cytotoxicity
- Phototoxicity
- Transdermal Absorption
- Anti-peeling/ Dandruff

In Vitro Evaluation For Cosmetics Efficacy

Efficacy		Evaluation Model	Evaluation Indicator
Whitening	Enzymatic Activity Assay	Tyrosinase Activity Assay	Inhibition rate of tyrosinase activity
		Measurement of intracellular tyrosinase activity in A375 human melanin cells	Inhibition rate of tyrosinase activity
		Measurement of intracellular melanin content in B16F10 mouse melanin cells	Melanin content
	Melanin Experiment	Measurement of intracellular tyrosinase activity in B16F10 mouse melanin cells	Inhibition rate of tyrosinase activity
		Measurement of dendrite length and quantity in MNT-1 human melanin cells	Length and quantity of dendrites in melanocytes
		Length and quantity of dendrites in melanocytes	E.g. TRP-1, TYR, etc.
		Measurement of intracellular melanin content in MNT-1 human melanin cells	Melanin content
		Fluorescent staining - Melanin transfer	Melanin transfer
	Antioxidant	DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging assay	DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging assay free radical scavenging rate
		PTIO(2-phenyl-4,4,5,5-tetramethylimidazoline-1-oxyl 3-oxide) radical scavenging assay	PTIO(2-phenyl-4,4,5,5-tetramethylimidazoline-1-oxyl 3-oxide) free radical scavenging rate
		Induction of oxidation stress model in HaCaT by UVB	Free radicals including ROS, SOD
	Anti-glycosylation	Bovine serum albumin (BSA) - Fructose Maillard reaction simulation	Inhibition rate of advanced glycation end products (AGEs)
		High glucose-induced fibroblast glycation model	AGEs（CML）, measurement of RAGE content, and measurement of glucose uptake
		Glycation model of natural aging in primary fibroblasts	AGEs（CML）, measurement of RAGE content
Anti-aging	Anti-wrinkle	Elastase inhibition experiment	Elastase activity inhibition rate
		Collagen inhibition experiment	Inhibition rate of collagenase
		UVA-induced model of primary fibroblast aging	Measurement of ROS content, staining of β-galactosidase, and mitochondrial membrane potential
		UVA-induced model of primary fibroblast aging	Type I collagen and elastin content
		UVA-induced model of primary fibroblast aging	Expression of elastin degradation related genes (MMPs)
		UVA-induced model of primary fibroblast aging	Expression of aging-related genes (P53, P21, P16)
	Firming	Elastase inhibition experiment	Elastase activity inhibition rate
		Primary fibroblast aging model	Type I collagen and elastin content
	Cell Aging Model	UVB-induced photoaging model in epidermal stem cells	Measurement of ROS content, staining of β-galactosidase, mitochondrial membrane potential and stemness (integrin α6 and integrin β1) expression
		UVA-induced model of fibroblast aging	Measurement of ROS content and expression of aging-related genes (P53, P21, P16)
		Advanced glycation end products (AGEs) induced model of primary fibroblast aging	Measurement of ROS content and expression of aging-related genes (P53, P21, P16)
	Antioxidant	DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging assay	DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging assay free radical scavenging rate
		PTIO(2-phenyl-4,4,5,5-tetramethylimidazoline-1-oxyl 3-oxide) radical scavenging assay	PTIO(2-phenyl-4,4,5,5-tetramethylimidazoline -1-oxyl 3-oxide) free radical scavenging rate
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		Glycation model of natural aging in primary fibroblasts	AGEs（CML）, measurement of RAGE content
Sensitive Skin	Moisturizing	Keratinocytes	Expression of moisturization-related genes (AQP3, HAS3)
		Keratinocytes	Expression of barrier-related genes (ZO-1, Claudin-1, Occludin)
		HaCaT cell dehydration model	Cell vitality, cell morphology
		3D skin model	Expression of moisturization- and barrier-related proteins

In Vitro Evaluation For Cosmetics Efficacy

Efficacy		Evaluation Model	Evaluation Indicator
Sensitive Skin	Reliving	Inhibition of hyaluronidase	Inhibition of hyaluronidase
		CAP stimulated model in HaCaT cells	Calcium concentration， expression of TRPV1
		UVB stimulated inflammation model in HaCaT cells	Measurement of inflammatory factors (TNF-α, IL-6, etc.)
		LPS stimulated inflammation model in HaCaT cells	Measurement of inflammatory factors (IL-6, IL-8, TNF-α, IL-1β, etc.)
		C48/80 stimulated P815 mast cell degranulation model	Quantity of degranulation
		3D skin damage model	Measurement of inflammatory factors (IL-6, IL-8, TNF-α, IL-1α, etc.)
	Repairing	Barrier-related genes in HaCaT cells	Expression of barrier-related genes (AQP3, FLG, Caspase-14, Claudin-1, occludin)
		Cell wound scratch assay	Skin mobility rate
		SDS stimulated cell damage model in HaCaT cells	Cell vitality
		3D skin damage model	Measurement of inflammatory factors (IL-6, IL-8, TNF-α, IL-1α, etc.)
		3D skin damage model	Expression of barrier-related genes (AQP3, FLG, Caspase-14, Claudin-1, occludin)
Acne Removal		Measurement of sebum content in sebaceous gland cells	Lipid droplets
		Stimulation of sebum secretion in sebaceous gland cells by sodium palmitate	Lipid droplets, Expression of genes related to lipid synthesis (SREBP-1, FAS)
		Stimulation of sebum secretion in sebaceous gland cells by dihydrotestosterone (DHT)	Lipid droplets, Expression of genes related to lipid synthesis (SREBP-1, FAS)
		LPS stimulated inflammation model in HaCaT cells	Measurement of inflammatory factors (IL-6, IL-8, TNF-α, IL-1β, etc.)
		Propionibacterium acnes bacteriostasis experiment	Bacterial growth inhibition zone, MIC
		Measurement of bacterial biofilm formation	Inhibition rate of bacterial colonization
Oil Control		Measurement of sebum content in sebaceous gland cells	Lipid droplets
		Stimulation of sebum secretion in sebaceous gland cells by sodium palmitate	Lipid droplets, Expression of genes related to lipid synthesis (SREBP-1, FAS)
		Stimulation of sebum secretion in sebaceous gland cells by dihydrotestosterone (DHT)	Lipid droplets, Expression of genes related to lipid synthesis (SREBP-1, FAS)
		Type II 5α-reductase inhibition experiment	Inhibition rate of dihydrotestosterone (DHT) generation
Anti-peeling / Dandruff / Scalp care		Inhibition of Malassezia	Bacterial growth inhibition zone, MIC
		Type II 5α-reductase inhibition experiment	Inhibition rate of dihydrotestosterone (DHT) generation
		Testing of cell proliferation, migration rate, and aggregation ability in DPC (dermal papilla cells)	Cell proliferation, migration rate, and aggregation ability
		Induction of DPC (dermal papilla cells) injury model by dihydrotestosterone (DHT)	Expression of growth factors (VEGF, IGF, FGF, etc.) and AR
		Induction of DPC (dermal papilla cells) injury model by hydrogen peroxide	Expression of growth factors (VEGF, IGF, FGF, etc.), measurement of ROS content
		Isolated hair follicles of mice	Tissue viability
		Inhibition of LNCaP cell proliferation	Cell vitality
		Stimulation of sebum secretion in sebaceous gland cells by dihydrotestosterone (DHT)	Lipid droplets, Expression of genes related to lipid synthesis (SREBP-1, FAS)
Exfoliating		Isolated pig skin	Exfoliated keratinocytes and their protein content
Transdermal Absorption		Franz diffusing cells method	Permeability rate

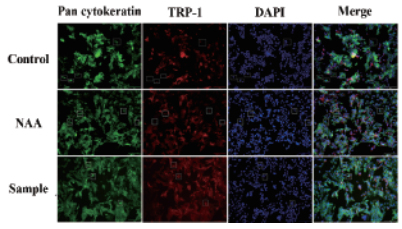
In Vitro Evaluation For Cosmetics Safety

Efficacy	Evaluation Model	Evaluation Indicator
Cytotoxicity	Cell vitality (Keratinocyte, Sebaceous gland cells, Melanocytes, Dermal papilla cell, Fibroblast, Epidermal stem cell, 3D skin model)	MTT or CCK-8
Genotoxicity	Bacterial reverse mutation test (Ames)	OECD 471
	In vitro mammalian cell chromosome aberration test	OECD 473
	In vitro mammalian cell micronucleus test	OECD 487
Skin Irritation	Reconstructed Human Epidermis Test	OECD 439
Eye Irritation	Eye irritation/corrosion-chicken embryo chorioallantoic membrane test	China SN/T 2329-2009
Phototoxicity	In vitro 3T3 NRU Phototoxicity Test	China ' Cosmetic Safety Technical Specifications ' State Food and Drug Administration (2015 Edition) Chapter 6 18

Unique In-Vitro Technique

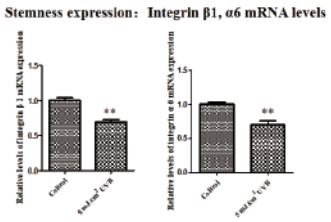
Whitening

Melanin transfer of senescent cells



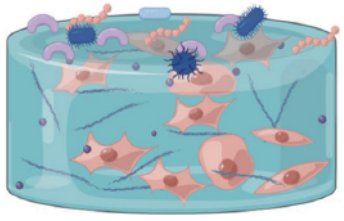
Anti-aging

Photoaging of epidermal stem cells



Sensitive Skin

Skin Microbiome Model



In-Vitro Evaluation Laboratory

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