

# DC Detoxdefense™

INCI: Water, Phospholipids, Butylene Glycol, Cordyceps Sinensis Extract, Beta Vulgaris (Beet) Root Extract

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## Multi Layer Vesicles of Concentrated Skin Protection

**DC Detoxdefense™** is a “smart ingredient” comprised of multi-layer, phospholipid-based vesicles concentrated with protective and detoxifying extracts. By supporting the skin’s own DNA and cell protection, DC Detoxdefense™ defends against premature aging and helps maintain a healthy, beautiful complexion.



Highly skin compliant, DC Detoxdefense™ is readily absorbed by the skin offering optimal delivery of potent, naturally-occurring antioxidants and cell regulating compounds. These main components work synergistically for maximum skin protection:

- ◆ **Cordyceps**, a mushroom-like fungus rich in minerals amino acids and vitamins, used throughout Asia for many centuries to help to maintain and improve health: Proven efficacious in increasing the ATP (energy) production in the mitochondria of human cells. Increases cellular superoxide dismutase (SOD) for a protective effect.
- ◆ **Soy** phospholipids to improve elasticity and restore lipid barrier function.
- ◆ **Beet** extract rich in glycosidic antioxidants to detoxify and protect from free radicals, while its naturally occurring betaines bind water providing for excellent humectancy.

### BENEFITS

- ◆ Stimulates skin’s own antioxidant protection (SOD)
- ◆ Protective against UV radiation
- ◆ Protects collagen
- ◆ Improves skin integrity by strengthening dermal/epidermal junction
- ◆ Increases skin’s own detoxification mechanism

### APPLICATIONS

- ◆ Anti-aging
- ◆ Toners
- ◆ Anti-acne
- ◆ Daily protection
- ◆ Sun care
- ◆ Detoxifying

### TYPICAL PROPERTIES

Appearance	Milky brown liquid
Odor	Characteristic
pH	4.75 - 6.75
Specific Gravity	0.980- 1.150

### FORMULATION GUIDELINES

Recommended Use Level	1.0-3.0%
	Use at pH 4-7. Disperse in emulsion or gel at or below 40°C

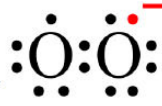
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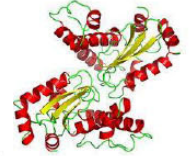
## MECHANISM



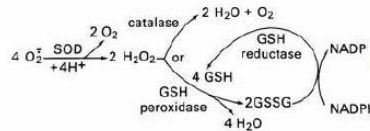
UV sunlight and environmental pollutants help generate superoxide free radicals



DC Detoxdefense™ with cordyceps up regulates Super Oxide Dismutase human gene expression



Super oxide free radicals oxidize lipids, damage DNA, induce cell death and contribute to the appearance of aging skin



Super Oxide Dismutase (enzyme) quenches the superoxide free radicals reducing its destructive activity

## MODULATION OF GENE EXPRESSION

Gene Name	Significance	Modulation (%)
<b>Matrix metalloproteinase-8 (MMP8)</b>	Involved in the breakdown of extracellular matrix (ECM)	-24
<b>Collagen XV, α1</b>	Adheres basement membranes to underlying connective tissue stroma. Maintains cell structure and integrity	+15
<b>Superoxide dismutase-2, mitochondrial (SOD2)</b>	Enzyme which transforms toxic superoxide into H2O2 and oxygen	+70
<b>Laminin α2</b>	Important protein of ECM responsible for cellular organization	+19
<b>Cytochrome P450</b>	Enzyme responsible for cell metabolism (detoxification) and bioactivation	+22

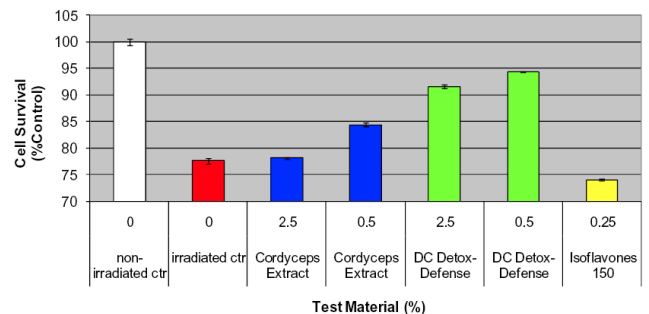
### Method:

- ◆ EpiDerm tissues
- ◆ Test Material- DC Detoxdefense™ at 0.5% (vol:vol)
- ◆ The incubation time with skin tissues- 3 days
- ◆ RNA extraction with Qiagen kit
- ◆ RNA assayed twice by electrophoresis (after extraction and before microarray analysis)

## UV PROTECTION

### Method:

- ◆ EpiDerm tissues
- ◆ Test materials – Isoflavones at 0.25% (w:v), Cordyceps and Detox Defense at 2.5% and 0.5% (vol:vol)
- ◆ Treated samples incubated 48h, then UVB irradiated for 1 MED
- ◆ Following the irradiation, skin substitutes were incubated again for 16 hours
- ◆ Cell viability determined using the standard MTT method



Skin substitute tissues treated with DC Detoxdefense™ showed a significant improvement in cell viability after UV exposure demonstrating the powerful cell protective properties of this ingredient.

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