

Product for anti-oxidant effect

# Yeongzi Extract

*Adaptogenic Herb*

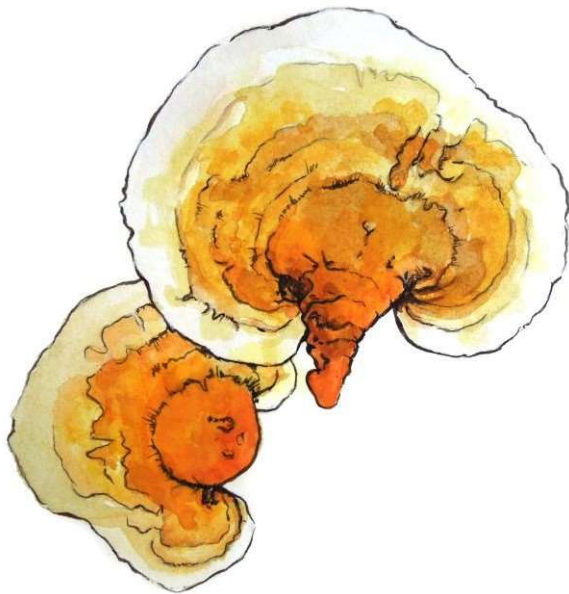
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## Plant Story

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*Ganoderma lucidum*, also known as reishi or lingzhi, has been used for over 2,000 years in China. When ancient Chinese people discovered reishi in Changbai mountains for the first time, they had known it has a potent **anti-aging effects**. As a mushroom with a very long history of use, reishi is considered not only just a therapeutic herb but also the most sacred mushroom, and even Chinese people call it **‘the mushroom of immortality.’** Furthermore, Many Taoists and monks have been insisting that the reishi nourish the spirit because it helps **to relax and calm the mind.**

## Adaptogen Story

**Adaptogen** protects our body from the both exterior and interior stresses and strengthens the defensive ability. It **helps the body keep its homeostasis**. The word 'adaptogen' was firstly used by N. V. Lazarev who was a famous scientist in 1940s. He found that a natural compound reacts to **increase the body's resistance to stressors**. Many generations ago, lots of adaptogen herbs were used in Ayurveda (the Traditional Indian Medication) and TCM (the Traditional Chinese Medicine). So most of adaptogen herbs are familiar to Asian people. Adaptogens can be easily confused with stimulants. However, the **adaptogen increases the body potential by acting on the RNA synthesis** in the cells without any energy, whereas, the stimulants affect the metabolism to make high performance and require a prolonged recovery time.



## *in vitro* Efficacy Evaluation

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### ❁ Anti-oxidant Effect

DPPH Scavenging Activity

Inhibition of UVB-induced ROS in Fibroblasts

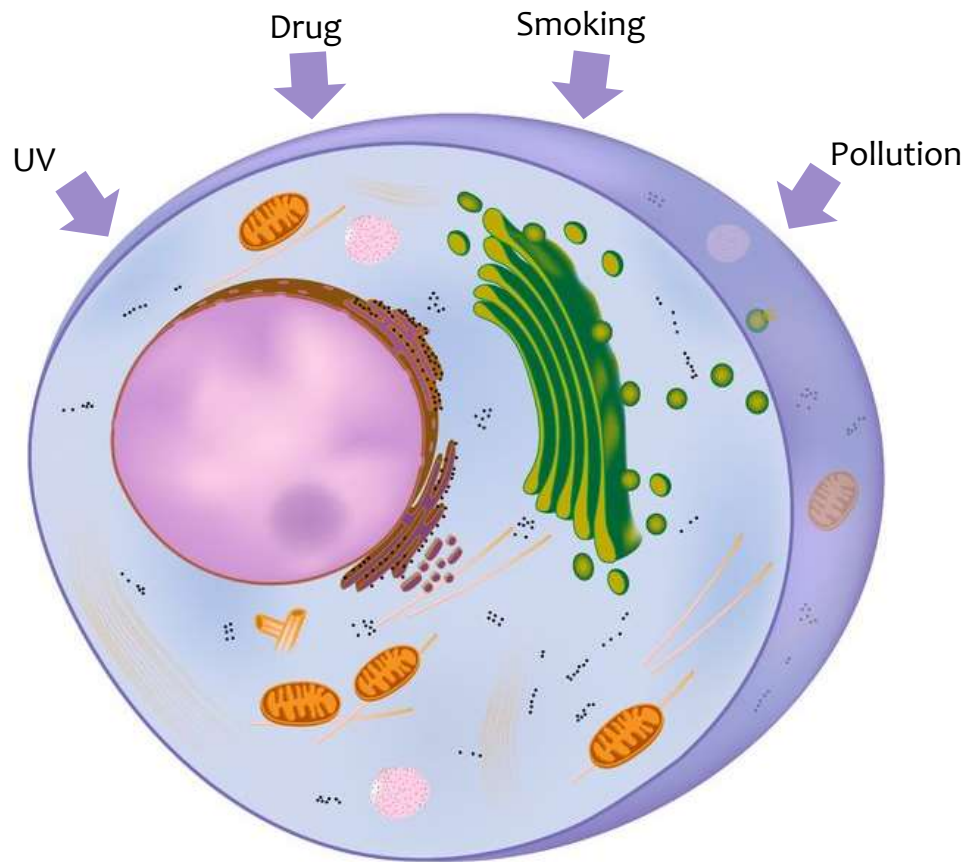
### ❁ Anti-photoaging Effect

Inhibition of UVB-induced MMP-1 Protein wxpression



# Oxidative Stress

Reactive Oxygen Species (ROS) can be increased by



Intracellular ROS may induce

- DNA damage
- Lipid peroxidation
- Amino acid oxidation: protein damage
- Oxidation of co-factors: enzyme inactivation
- Chronic inflammation

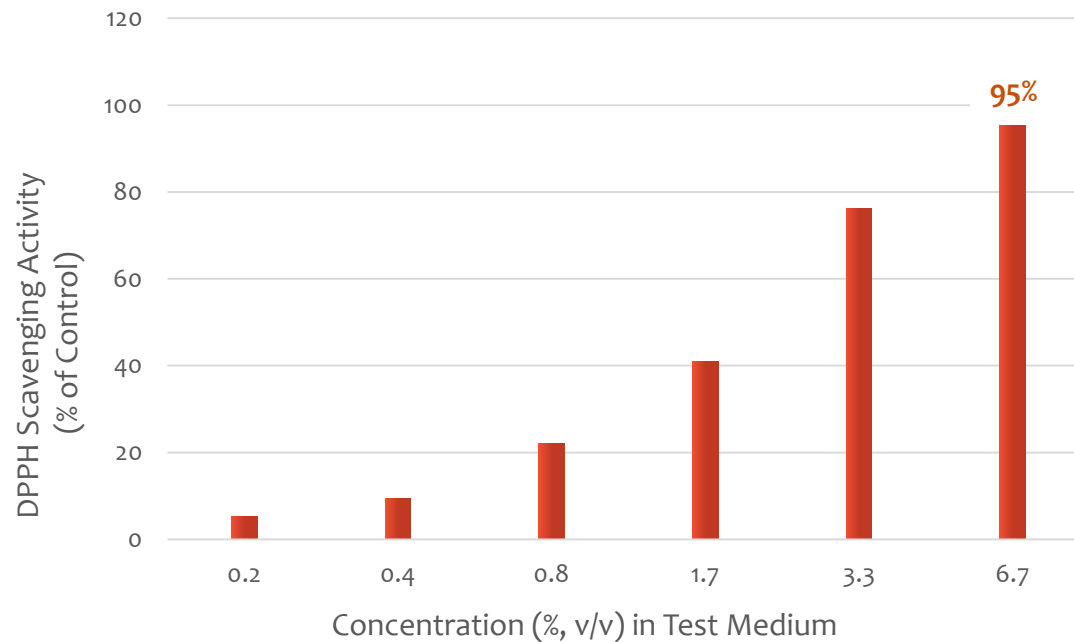
ROS



Skin Aging  
Inflammation

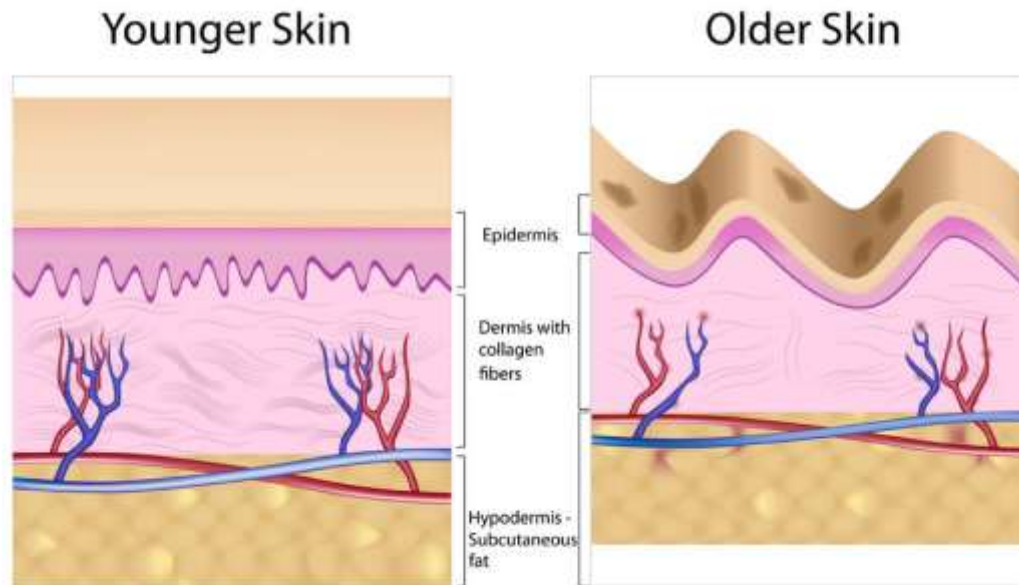
# in vitro Efficacy Evaluation: Anti-oxidant Effect

## •• DPPH Scavenging Activity



Anti-oxidant property of **Yeongzi Extract** has been measured by measuring DPPH (1,1-diphenyl-2-picrylhydrazyl radical) scavenging activity. As a result, the highest DPPH scavenging activity was observed as **95% at 6.7% of Yeongzi Extract**.

# Skin Aging and Wrinkle Formation

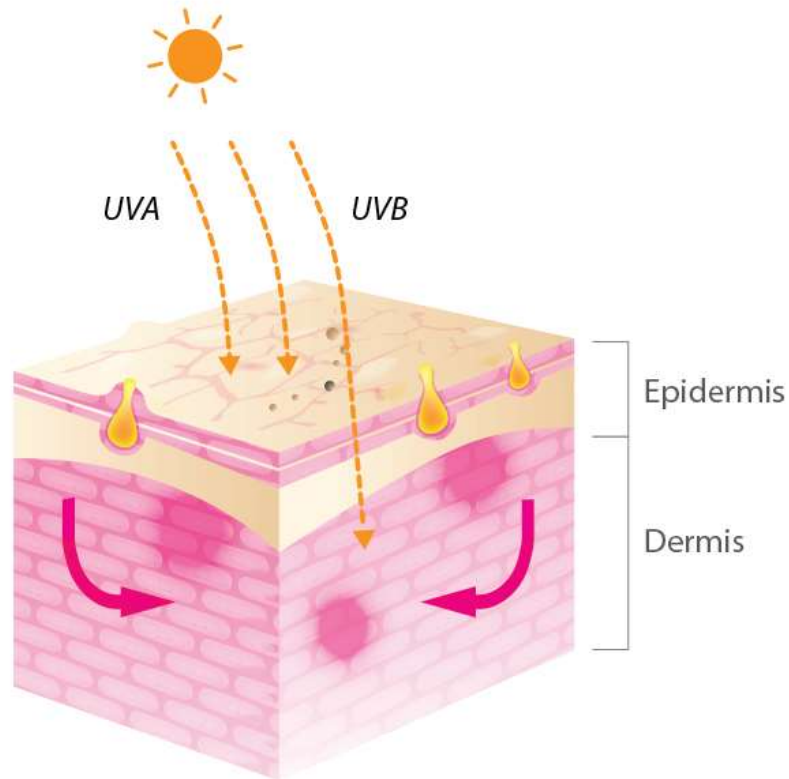


## ❖ Skin aging is noted by

- a decrease of elasticity
- formation of wrinkles and fine lines
- degradation of collagen
- thinner and weaker skin
- damaged connective tissues

Skin changes with increasing age due to both intrinsic and extrinsic factors. Intrinsic skin aging is determined by genetic factors, hormonal status and metabolic reactions such as oxidative stress. One of the most important extrinsic skin aging factors is induced by UV radiation by sun exposure, referred to as *photoaging*. Smoking cigarettes and environmental pollution are also essential factors in premature skin aging and wrinkle formation.

# What is Photoaging?



UV radiation causes skin aging



Free radicals ↑



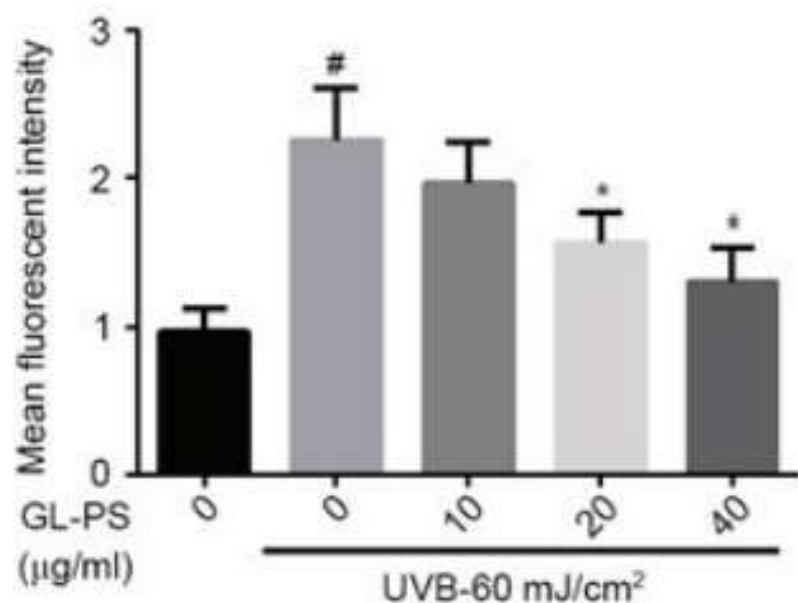
**Photodamage**  
(Inflammation, wrinkle,  
and pigmentation)



# in vitro Efficacy Evaluation: Anti-photoaging Effect

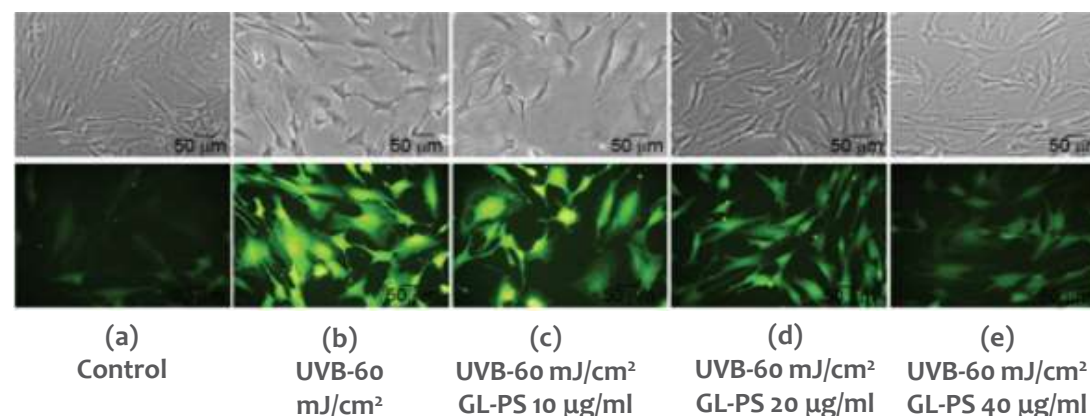
## 🔬 Inhibition of UVB-induced ROS in Fibroblasts

Fluorescent Staining of ROS-positive Cells



#p<0.01 vs. UVB non-exposed/GL-PS untreated cells

\*p<0.05 vs. UVB exposed/GL-PS untreated cells.



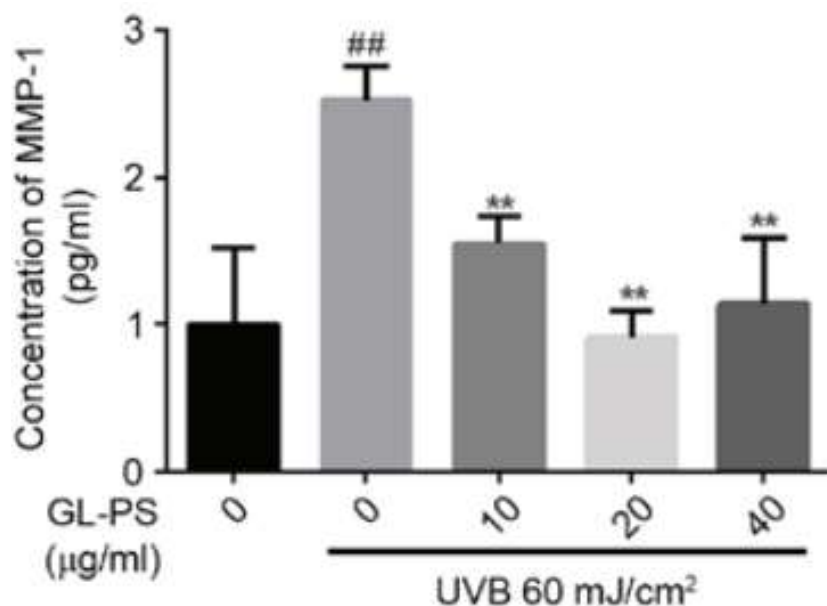
*Ganoderma Lucidum* Polysaccharides (GL-PS) is a major active ingredient of *Ganoderma lucidum*. GL-PS inhibits UVB-induced ROS in fibroblasts. Cells exposed to UVB exhibited increased fluorescence compared with non-exposed control cells, indicating increased ROS production.

**Fluorescence significantly decreased in UVB exposed cells with 20 and 40 µg/ml of GL-PS.**

Reference: *Ganoderma lucidum* polysaccharides protect fibroblasts against UVB-induced photoaging, Zeng et al., Molecular Medicine Reports, 2017, p.111-116

## in vitro Efficacy Evaluation: Anti-photoaging Effect

### 🔴 Inhibition of UVB-induced Protein Expression of Matrix Metalloproteinase-1 (MMP-1)



# $p < 0.01$  vs. UVB non-exposed/GL-PS untreated cells

\* $p < 0.05$  vs. UVB exposed/GL-PS untreated cells.

*Ganoderma Lucidum* Polysaccharides (GL-PS) is a major active ingredient of *Ganoderma lucidum*. Cells exposed to UVB together with GL-PS **significantly decreased the expression of MMP-1 protein, which is a protein breaking down the interstitial collagens (type 1, 2, and 3)**, compared with untreated cells.

UV-induced excess intracellular reactive oxygen species (ROS) activates mitogen-activated protein kinases (MAPKs) and nuclear factor- $\kappa$ B (NF- $\kappa$ B), culminating in the transcriptional regulation of MMPs and results in the degradation of collagen and elastin, subsequently leading to photoaging.

Reference: *Ganoderma lucidum* polysaccharides protect fibroblasts against UVB-induced photoaging, Zeng et al., Molecular Medicine Reports, 2017, p.111-116

## Product Information

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- ❖ **Product Name:** Yeongzi Extract-GNS, Yeongzi Extract(PD)-RSPO, Yeongzi Extract(GOL)-RSPO
- ❖ **INCI Name:** Ganoderma Lucidum (Mushroom) Extract
- ❖ **Dosage:** 1 – 3%
- ❖ **Formulation:** Add to the formulation when the temperature is lower than 55°C. Recommended to add after the cooling process.
- ❖ **Storage:** Avoid direct light or UV.  
Keep it in a dry area at room temperature.

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