

# Coprino extract, the extract from *Coprinus comatus* suppresses photo-damage in fibroblasts and mouse skin induced by ultraviolet-B

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## ABSTRACT

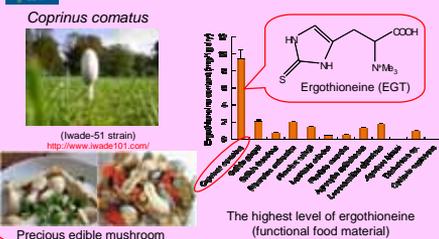
### Introduction 1

*Coprinus comatus* is considered as a precious edible mushroom in Italy etc. We found that *Coprinus comatus* (Iwade-51 strain) contained the highest level of ergothioneine (EGT) among several mushrooms.

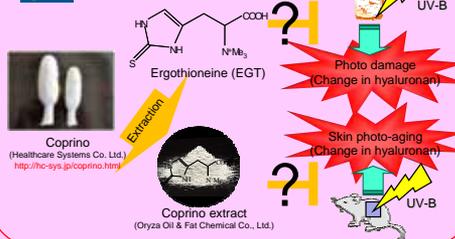
### Introduction 2

In this study, we evaluated the protective effect of the Coprino extract containing 1% EGT on the photo damage and on the skin photo-aging associated with the hyaluronan change induced by ultraviolet (UV)-B irradiation.

## Introduction 1



## Introduction 2



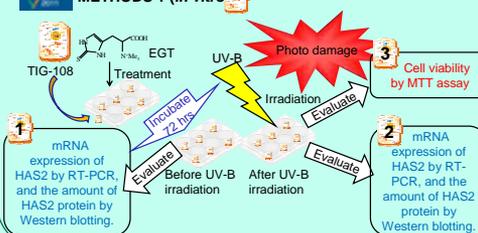
## Methods 1 (in vitro)

In the *in vitro* study, normal human diploid fibroblasts (TIG-108, derived from Japanese female) was treated with EGT for 72 hrs and the mRNA expression of hyaluronan synthase 2 (HAS2) was evaluated by RT-PCR and the protein of HAS2 was evaluated by Western blotting. Then the cells were irradiated with UV-B (755 mJ/cm<sup>2</sup>, 14.4 mW/cm<sup>2</sup>), and the cell damage was evaluated by the MTT assay. And again, the mRNA and protein expression of HAS2 were evaluated.

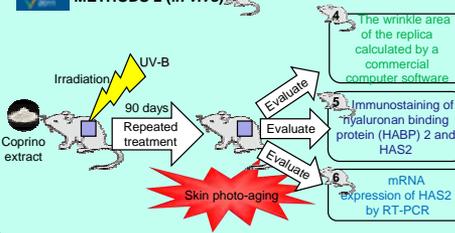
## Methods 2 (in vivo)

In the *in vivo* study, the Coprino extracts (Oryza Oil & Fat Chemical Co., Ltd.) were given orally to mice (Hos; HR-1, 6 weeks old), and the dorsal skins were irradiated with UV-B (120 mJ/cm<sup>2</sup>) for 3 hrs. After the repeated treatment for 90 days, the irradiated parts of dorsal skins were evaluated, the wrinkle area of the replica was calculated by a commercial computer software, the protein expression was evaluated by immunostaining, and the mRNA expression was evaluated by RT-PCR.

## METHODS 1 (in vitro)



## METHODS 2 (in vivo)



## Results 1

### (in vitro, before UV-B irradiation)

EGT enhanced both mRNA and protein expressions of HAS2.

### (in vitro, after UV-B irradiation)

The mRNA and protein expressions were enhanced by UV-B irradiation. Moreover EGT enhanced both the mRNA and protein expressions of HAS2. EGT tended to suppress the photo damage.

## Results 2

### (in vivo)

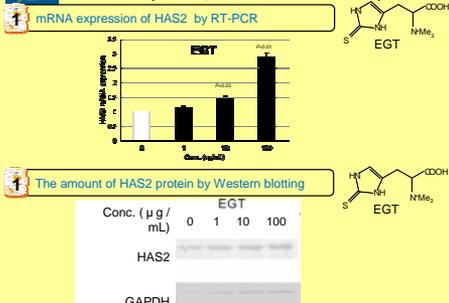
In the UV-B irradiated mice, the wrinkle areas were increased. The Coprino extract decreased the wrinkle areas in a dose-dependent manner.

The Coprino extract enhanced the HABP2 expression on the upper area of dermis and the HAS2 expression on epidermis. In the UV-B irradiated mice, the mRNA expression of HAS2 was decreased. The Coprino extract recovered suppression of the HAS2 expression.

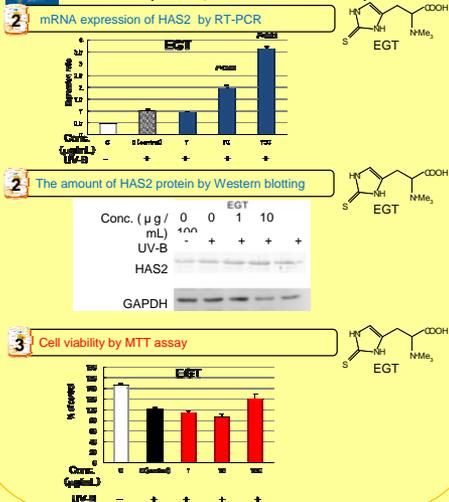
## CONCLUSIONS

These results showed that the Coprino extract suppresses the cell damage and the wrinkle formation induced by UV-B. It was suggested that EGT is partially involved in the recovery effect of Coprino extract on skin photodamage by hyaluronan production through HAS2 expression. The Coprino extract is found to be effective for the skin photo-aging.

## RESULTS 1 (in vitro, before UV-B irradiation)



## RESULTS 1 (in vitro, after UV-B irradiation)



## RESULTS 2 (in vivo)

