

## Protection Effect of Hispolon Against Oxidative Damage Induced by Hydrogen Peroxide Via Antioxidant Effect Through MMP2/9, P38 and JNK Signaling Pathways

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### Background & Aim :

Sangwhang (*Phellinus linteus*, PL) is a mushroom traditionally used as food and medicine in Taiwan. In this work, hispolon from PL was examined using different antioxidative models (2, 2'-azino-bis (3-ethylbenzothiazoline-6-sulphonic acid) (ABTS), ferric reducing antioxidant power (FRAP), 2, 2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging capacity, and reducing power). In addition, we investigated the protective effects of hispolon against H<sub>2</sub>O<sub>2</sub>-induced oxidative damage in HepG2 cells. Intracellular generation of reactive oxygen species (ROS) leads to oxidative stress and subsequent damage of cellular components.

### Materials & Methods :

### Results :

Hispolon significantly reduced the cell growth inhibition caused by H<sub>2</sub>O<sub>2</sub>. Furthermore, hispolon ameliorated lipid peroxidation as demonstrated by a reduction in MDA formation, and attenuated glutathione (GSH) depletion in a dose-dependent manner. In addition, ROS activate various signal transduction pathways including the metalloproteinases (MMP)-2, -9, mitogen-activated protein kinase (MAPK) cascade, and caspase 3 activity. The results showed that hispolon significantly inhibited the MMP-2 and MMP-9 expressions, selectively inhibited the phosphorylation of p38 and c-Jun NH<sub>2</sub>-terminal kinase (JNK), without affecting and extracellular signal-regulated protein kinase (ERK) by H<sub>2</sub>O<sub>2</sub> stimulation, and the inhibited of caspase-3 activity in H<sub>2</sub>O<sub>2</sub>-induced HepG2 cells.

### Conclusion :

These results strongly suggest that hispolon has significant protective ability against oxidative damage.

### Keywords:

*Phellinus linteus*; hispolon; antioxidant; hydrogen peroxide