Anti-inflammatory effect of the sclerotium of *Lignosus rhinocerotis* (Cooke) Ryvarden, the Tiger Milk mushroom

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**Abstract**

**Background:** The sclerotium of *Lignosus rhinocerotis* (Cooke) Ryvarden (Tiger Milk mushroom) is used as a traditional medicine to relieve cough, asthma and chronic hepatitis. The traditional uses of the sclerotium are presumably related to its anti-inflammatory effect. The present study was carried out to evaluate the anti-inflammatory activity of the sclerotial powder of *L. rhinocerotis* (Cooke) Ryvarden (Tiger Milk mushroom) cultivar TM02.

**Methods:** The anti-inflammatory activity of the sclerotial powder of *L. rhinocerotis* cultivar TM02 was investigated using carrageenan-induced paw edema test while the inhibition of transudative and proliferative phases of chronic inflammation were studied by cotton pellet induced granuloma model. Sprague Dawley rats were used in both studies. The anti-inflammatory activity was also measured by inhibition of lipopolysaccharide induced TNF-alpha production in RAW 264.7 macrophage cells.

**Results:** Cold water extract (CWE), hot water extract (HWE) and methanol extract (ME) of the sclerotial powder of *L. rhinocerotis* cultivar TM02 possessed anti-inflammatory activity as was measured by carrageenan-induced paw edema test, with CWE being the most potent. The acute anti-inflammatory activity of the cold water extract (CWE) was mainly contributed by its high molecular weight (HMW) fraction isolated by Sephadex G50 gel filtration chromatography. Its protein component was very potent in the inhibition of TNF-alpha production with an IC₅₀ of 0.76 μg/ml. CWE at 200 mg/kg did not inhibit transudative and proliferative phase of chronic inflammation as shown by using the cotton pellet induced granuloma model.

**Conclusions:** Our results suggested that most of the bioactive substance(s) contributed to the acute-inflammatory activity of the sclerotial powder of *L. rhinocerotis* cultivar TM02 appear to be in the CWE, particularly its HMW fraction. The anti-inflammatory activity of CWE was mainly contributed by the protein component of the high molecular weight (HMW) fraction and it exhibited strong inhibitory effect on TNF-alpha production but the possibility of synergistic effect between HMW, MMW and LMW fractions cannot be excluded. Future studies will provide new insights into the anti-inflammatory activity of the sclerotial powder.

**Keywords:** *Lignosus rhinocerotis*, Sclerotium, Anti-inflammatory, Carrageenan-induced paw edema, Cotton pellet induced granuloma

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