BIOMASS REISHI- natural enzyme therapy

Professor Amin Karmali explores the power behind the reishi mushroom.

Some mushrooms have been known to exhibit several health benefits for thousands of years in China and other Asian cultures.

The Reishi mushroom, also known as *Ganoderma lucidum*, is well characterised in Traditional Chinese Medicine (TCM) for the prevention and treatment of allergies.

TCM references to the use of Resihi go back to 250 AD; in the famous Divine Farmer's Materia Medica, herbs are divided into three classes, with the upper class of herbs consisted of ginseng, astragalus and the following three mushrooms; Reishi (Ganoderma lucidum), Poria cocos and Cordyceps sinensis.

The upper class of herbs are characterised as herbs that are non-toxic, strengthen the body and can be used preventively (mild effect, long-term use) rather than curatively (strong effect, short-term).

USE IN HISTAMINE MEDIATED ALLERGIC RESPONSE

In the West, Reishi has been used in the management of histamine-mediated allergic responses. In particular, Reishi has been shown to have specific anti-inflammatory properties and the reason has been linked to the isolation from the herb, of a family of ganoderic acids, triperpene compounds with a basic lanostane structure which exhibits anti-inflammatory properties[1].

The compound Ganoderic Acid C, isolated by careful fractionalization of a non-polar solvent extract of Reishi (Ganoderma lucidum), is found to account for most of the anti-inflammatory activity in vitro tests, such as histamine release from mast cells[1].

For this reason, Reishi (Ganoderma lucidum) supplementation may offer an alternative to the use of corticosteroids to reduce histamine mediated allergic response, such as in hay fever. A case study has demonstrated that the biomass form of Reishi (Ganoderma lucidum) of 3g a day has been demonstrated to be useful in adults with chronic hay fever[1].

WHY BIOMASS VERSUS EXTRACT

In the West, Reishi is sold in an extracted form (extracted specifically for ß-glucan content) or in a biomass form (mycelium and primordial (young fruit body)). The biomass form contains several substances of clinical interest such as enzymes, secondary metabolites and ß-glucans.

The biomass form offers not only the ß-glucans content but also enzymes, which play a role in immune support that complement the anti-inflammatory function of Reishi[2].

It has been known for over a century that some enzymes can be used in the

TABLE I: ENZYMES ACTIVITY PER G OF PRODUCT. PROFESSOR AMIN KARMALI

		IN ABSENCE OF PROTEOLYTIC ENZYMES		IN THE PRESENCE OF PEPSIN		IN THE PRESENCE OF TRYPSIN	
		Reish Biomass	Reshi Extract	Reish Biomass	Reshi Extract	Reish Biomass	Reshi Extract
1	Peroxidase activity	20.9 m U	0.0 m U	18.3 m U	0.0 m U	18.7 m U	0.0 m U
2	Glucoamylase/ Beta-glucanasase activity	5.3 U	0.0 U	4.8 U	0.0 U	4.9 U	0.0 U
3	Protease activity	9.1 m U	1.1 m U	8.4 m U	1.0 m U	8.5 m U	0.8 m U
4	Glucose 2-oxdase activity	14.3 m U	10.1 m U	12.1 m U	7.2 m U	13.2 m U	8.5 m U
5	Superoxide dismutase (SOD) activity	98.4 m U	99.8 m U	82.3 m U	71.7 m U	87.5 m U	75.9 m U
6	Cytochrome	1.4 nmoles	1.5 nmoles	1.3 nmoles	1.1 nmoles	1.2 nmoles	1.0 nmoles

prevention and even treatment of several clinical conditions. These enzymes are divided into the following activities:

- Enzymes that prevent oxidative stress: Superoxide dismutase.
- Enzymes that prevent cellular growth: Protease, Glucoamylase
- Enzymes that promote detoxification: Peroxidase, Cytochrome P-450

Table I demonstrates the difference in enzyme content between a biomass form of and extracted form of Reishi (Ganoderma lucidum). Two samples (1g) of Reishi biomass powder and an extract of Reishi were compared to detect and to quantify enzyme activity in the presence of gastric (proteolytic) enzymes (pepsin and trypsin) in vitro. The biomass contains mycelia and primordial, whereas the extract is a concentrated extract (20x) of Reishi fruiting bodies[2].

With exposure to digestive enzymes, the extracted form of Reishi (Ganoderma lucidum) exhibits low levels of enzyme activity compared with the biomass form of Reishi (Ganoderma lucidum).

CONCLUSIONS

The differences in enzyme content between both samples may be due to differences in biological material in these samples since one contains mycelia and primordia (biomass form) whereas the other consists of concentrated (20x) extract of fruiting bodies.

The biomass form is more resistant to proteolytic enzymes (i.e simulation of digestive tract) than the extracted form of Reishi. The concentrated extract of the fruiting bodies is more exposed and available to the action of proteolytic enzymes (i.e simulation of digestive tract) since there are no chemical barriers to prevent such exposure[2].

Therefore, the Reishi (Ganoderma lucidum) biomass form not only has the advantage of enzyme activity, but the underlying anti-inflammmatory properties that are essential to reduction of histamine mediated immune response.

REFERENCES:

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Note: Biomass form of Ganoderma lucidum (Reishi) was supplied by Mycology Research Laboratories Ltd. (www.mycologyreserarch.com).

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