

## Lectin Crystals from Split-Gill Fungus, *Schizophyllum commune*

Podjana Chumkhunthod<sup>1</sup>, Sureelak Rodtong<sup>1</sup>, and Colin D Reynolds<sup>2</sup>

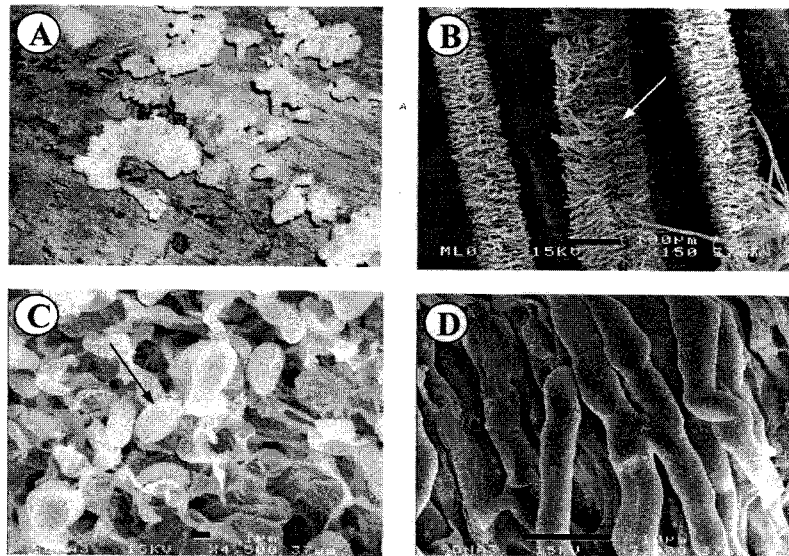
<sup>1</sup>School of Microbiology, Institute of Science, Suranaree University of Technology, Nakhon Ratchasima 30000, Thailand

<sup>2</sup>School of Biomolecular Sciences, Liverpool John Moores University, Byrom street, Liverpool L3 3AF, UK

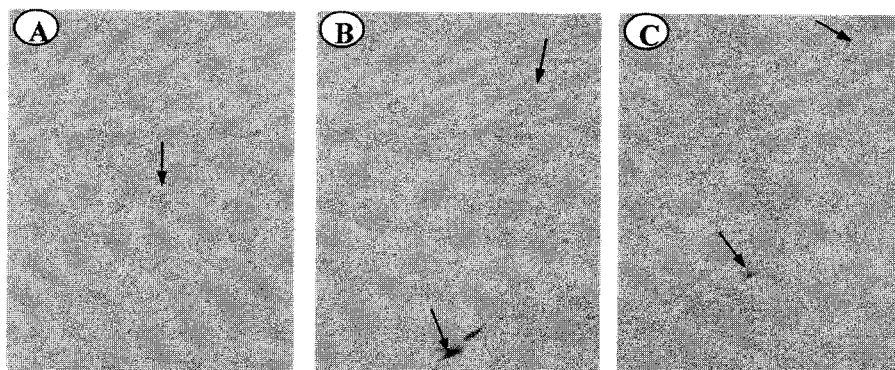
A novel lectin (carbohydrate-binding protein) was isolated from split-gill fungus, *Schizophyllum commune*, and was purified using a mucin-Sepharose 4B affinity column. SDS-polyacrylamide gel electrophoresis gave a major band of 31 kDa and faint band of 29 kDa. The *S. commune* lectin (SCL) showed high specificity towards N-acetyl-D-galactosamine. Lectin crystals were obtained by using the sitting drop vapour-diffusion method with poly ethylene glycol 8000 as precipitant. Under the stereomicroscope, typical plates like development of the crystals could be observed. An X-ray diffraction pattern to approximately 3.8 Å resolutions was recorded on the Synchrotron Radiation Source and showed that the SCL crystals belonged to the monoclinic system. Further work on SCL is in progress.

### References

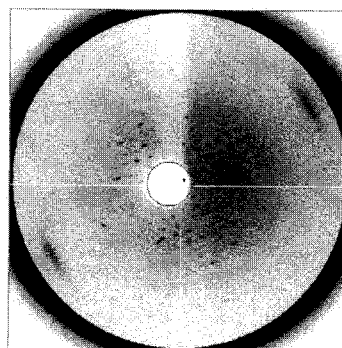
1. Wang H, Ng TB, and Ooi VEC. Lectins from mushrooms. *Mycol. Res.* 1998, 102(8): 897-906
2. Nagata, Y, Fukumori, F, Sakai, H, Hagiwara, T, Hiratsuka, Y, Kochibe, N, Kobata, A. Crystallization and characterization of a lectin obtained from a mushroom. *Biochim. Biophys. Acta.* 1991, 1076:187-190
3. Chattopadhyay, TK, Lisgarten, JN, Brechtel, R, Rüdiger, H, Palmer, RA. Crystallization of *Pleurotus ostreatus*. *Acta Cryst.* 1999, D55: 1589-1590
4. Leonidas, DD, Swamy, BM, Bhay, AG, Inamdar, SR, Kosmopoulou, MN, Chrysina, ED, Oikonomakos, NG. Crystallization and preliminary X-ray crystallographic analysis of *Sclerotium rolfsii*. *Acta Cryst.* 2003, D59: 363-365
5. Mo H, Winter HC, Goldstein IJ. Purification and characterization of Neu5Ac $\alpha$ 2-6Gal $\beta$ 1-4Glc/GlcNAc-specific lectin from the fruiting body of the polypore mushroom *Polyporus squamosus*. *J. Biol. Chem.* 2000, 275 (14): 10623-10629
6. Wang H, Gao J, Ng TB. A new lectin with highly potent antihepatoma and antisarcoma activities from the oyster mushroom *Pleurotus ostreatus*. *Biochem. Biophys. Res. Commun.* 2000, 275: 810-816
7. Wang H, Ng TB, Liu Q. Isolation of a new heteromeric lectin with mitogenic activity from fruiting bodies of the mushroom *Agrocybe cylindracea*. *Life. Sci.* 2002, 70: 877-885



**Figure 1.** The split-gill fungus morphology, (A) fruit bodies from natural habitat, (B, C, and D) scanning electron micrographs showing gills (arrow), spore (arrow), and hypha, respectively.



**Figure 2.** *Schizophyllum commune* lectin crystals (arrows, 40X) from sitting drop technique using three different crystallization conditions (A, B, and C).



**Figure 3.** Diffraction pattern of a crystal of the *Schizophyllum commune* lectin from synchrotron radiation.