

(For JSPS Fellow)

Form B-5

Date (日付)

19/10/2015 (Date/Month/Year: 日/月/年)

Activity Report -Science Dialogue Program-

(サイエンス・ダイアログ事業 実施報告書)

- Fellow's name (講師氏名): Jianqiao Wang (ID No. P15100)

- Participating school (学校名): Yamanashi Prefectural Kofu Minami High School

- Date (実施日時): 16/10/2015 (Date/Month/Year: 日/月/年)

- Lecture title (講演題目): (in English) Studies on the degradation of recalcitrant environmental pollutants by white-rot fungi

(in Japanese) 白色腐朽菌による難分解性環境汚染物質の分解に関する研究

- Lecture summary (講演概要): Please summary your lecture 200-500 words.

Since the 1980s when the composition of ligninolytic system in white rot fungi has been elucidated, this group of fungi attracted great attention. Evidence for the ability of white-rot fungi to degrade a range of recalcitrant environmental pollutants has been reported. The white-rot fungus *Phanerochaete sordida* YK-624, isolated from rotted wood, showed much higher ligninolytic activity and selectivity than typical white-rot fungi *P. chrysosporium* and *Trametes versicolor*. In this study, we investigate the degradation of mycotoxin Aflatoxin B1 (AFB), actamiprid (ACE) as a neonicotinoid insecticide, and bisphenol A (BPA) as a representative endocrine disrupting compound by the white-rot fungus *P. sordida* YK-624.

The maximum elimination (86%) of AFB was observed in the reaction mixture containing 5 nkat manganese peroxidases (MnP) from *P. sordida* YK-624 for 48 h treatment. The metabolite experiments suggest that AFB is firstly oxidized to AFB-8,9-epoxide by MnP and then hydrolyzed to AFB-8,9-dihydrodiol which is lower toxicity than AFB. Under ligninolytic and non-ligninolytic conditions, 45% and 30% of ACE were eliminated, respectively, after 15 d of incubation by fungal treatment. Cytochrome P450 plays an important role in the *N*-demethylation of ACE by *P. sordida* YK-624. BPA was oxidized to BPA phenoxy radicals by ligninolytic enzymes and then dimerized at extracellular region under ligninolytic condition. On the other hand, BPA was firstly monooxygenated to hydroxy-BPA by cytochrome P450, and then methylated by *P. sordida* YK-624 under non-ligninolytic condition. These BPA metabolites indicated lower estrogenic activity than BPA.

- Language used (使用言語): English and Japanese

- Lecture format (講演形式):

◆Lecture time (講演時間) 65 min (分), Q&A time (質疑応答時間) 15 min (分)

◆Lecture style (ex.: used projector, conducted experiments)

(講演方法 (例: プロジェクター使用による講演、実験・実習の有無など))

Used projector with powerpoint.

◆Interpretation (ex.: assistance by accompanied person, provided Japanese explanation by yourself) (通訳 (例: 同行者によるサポート、講師本人による日本語説明))

Japanese explanation was provided by myself.

◆Name and title of accompanied person (同行者 職・氏名)

◆Other noteworthy information (その他特筆すべき事項):

- Impressions and opinions from accompanied person (同行者の方から、本事業に対する意見・感想等がありましたら、お願いいたします。):