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Inhibitory Effects on Diabetes Related *Enzymes* of *Alnus firma*

Hye Jung Choi, Min Jung Hwang¹, Mi Ran Park, Young Whan Choi²,
Yong Kee Jeong³ and Woo Hong Joo^{1*}

Interdisciplinary Program in Biotechnology,

¹*Department of Biology, Changwon National University, Changwon 641-773, Korea*

²*School of Bioresource Science, Busan National University, Miryang 627-706, Korea*

³*Department of Biotechnology, Dong-A University, Busan 604-714, Korea*

In this study, we examined the anti-diabetic activity in vitro by the solvent fractions of *Alnus firma* which has been known to superior plants for the traditional prevention and treatment of fever, hemorrhage, diarrhea and alcoholism. α -Amylase and α -glucosidase, the principal enzymes involved in the metabolism of carbohydrates, and aldose reductase, the key enzyme of the polyol pathway, have been shown to play the important roles in the complications associated with diabetes. The inhibitory test showed that methanol (MeOH) extract and hexane (HX) fraction strongly inhibited pork pancreatin and salivary α -amylase activity. The MeOH extract and HX fraction of *A. firma* at the concentration of 4 mg/ml inhibited more than 70% of pancreatin and salivary α -amylase activity. The inhibitory effect of fractions has different specificities against α -amylase from pancreatin and salivary. In addition, the MeOH extract and butanol (BuOH) fraction showed the highest inhibitory activity on yeast α -glucosidase at values of IC₅₀ 137.36 μ g/ml and 115.14 μ g/ml respectively. The MeOH extract and BuOH fraction showed the highest inhibitory activity on yeast α -glucosidase than commercial agent such as 1-deoxynorjirimycin and acarbose. Inhibition kinetics of solvent fractions showed that α -glucosidase has been inhibited noncompetitively by the MeOH, EA and BuOH fraction. The aldose reductase from human muscle cell had been inhibited strongly by the MeOH extract and EA fraction at 57.996% and 83.293% at the concentration of 50 μ g/ml, respectively. These findings may contribute to biological significance in that α -amylase, α -glucosidase and aldose reductase inhibitory compounds could be used as a functional food and a drug for the symptomatic treatment of antidiabetic disease in the future.

Key words: *Alnus firma*, Solvent fractions, α -Amylase, α -Glucosidase, Aldose reductase

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Changes of Seasonal Patterns in Aquatic Fly Community in a Mud Habitat

Sang Jae Suh*, Yong Jung Kwon¹ and Jinseo Kim¹

Dept. of Environmental Horticulture, Kyungpook National University, Sangju 742-711, Korea

¹*School of Applied Biology and Chemistry, Kyungpook National University, Daegu 702-701, Korea*

An ecological investigation of aquatic fly community was carried out in a mud habitat at dumping sites of dredging in Busan New Port. The flies were collected at 12 sampling sites using the sweeping net method from March, 2006 to August, 2008.

In a result, we collected 15 species under 7 families. Among them, *Ephydra japonica*, *Leptocera fuscipennis* *Xanthocanace pollinosa* and *Thinophilus flavipalpis* were most abundant species. As the year pass by, the outbreak pattern and the dominant species: *Leptocera fuscipennis* in 2006, *Xanthocanace pollinosa* in 2007, and *Ephydra japonica* in 2008 were changed.

Most species showed the seasonal patterns and phenology that the each population density was more increasing to the rise in temperature and showed the peaks in August. Some species appeared only in a limited period, while a few species were founded as the adults until the winter season.

Community structure, species richness, species diversity, evenness, seasonal changes and seasonal patterns were studied.

Key words: Seasonal pattern, aquatic fly, community structure, species diversity.