

(05-4-14)

## Studies on the maize breeding using mutagenic chemical EMS treatments

Yong-Soo Lee<sup>1</sup>, Sin-Suk Won<sup>1</sup>, Byong-Dai Koh<sup>2</sup>, Hwang-Kee Min<sup>2</sup>,  
Young-Boum Shin<sup>1</sup> and Soon-Kwan Hong<sup>1\*</sup>

<sup>1</sup>Division of Biotechnology, Kangwon National University, Chunchon, Korea, 200-701

<sup>2</sup>Maize Experiment Station, Kangwon Agricultural Research and Extension Services, Hongcheon, Korea, 250-823

### Objectives

We conducted the mutagenic chemical EMS for maize seeds in order to establish useful mutant materials in maize breeding programs.

### Materials and Methods

1. Material: - Chemical mutagen: EMS(ethyl methanesulphonate)  
- Plant materials: Korean waxy corn inbred lines (Miback-chal, HW3, HW4, KS5, Hongcheon 5, 99S5001, 99S6009, KS7rhm, KS118, Suwon 19)

2. Methods:

The EMS treatment was conducted with the protocol of Redei(1974) and Redei et al(1984) with minor modifications.

### Results and Discussion

To study induced genetic variability, ten waxy corn inbred lines were used. Seeds of 10 waxy corn inbred lines were treated with EMS 0.075M, 0.1M and 0.15M for 2 h, 4 h, 6 h and 8 h. According to our results, the EMS treatment condition showed comparatively effective for EMS 0.1M for 8 h condition. After EMS treatments, among ten waxy corn inbred lines, 99S5001 showed the highest germination rates with 83.1 %, while HW3 showed the lowest germination rates with 22.6 %, compare with their non-treatment control inbred lines, respectively. The role of plant breeding in increasing food production and provide sustainable nutrition is well recognized. With increasing population and reducing land resources, it becomes even more important to breed plant varieties which can sustain production under the varied agro-climic conditions of different regions. The results of current study will be used for the further mutation breeding in maize breeding programs.

\* Corresponding author : Soon-Kwan Hong, TEL:033-250-6476, E-mail:soonkwan@kangwon.ac.kr.