

03-2-07

Revised Methods of Cold Pretreatment and Carbon Source on the Anther Culture of Rice

Gihwan Yi, Yongjae Won, Jongmin Ko, Hyangmi Park, Junhyeon Cho, Unsang Yeo, Nobong Park, Byeonggeun Oh, Saejun Yang, Soon-Chul Kim, and Min-Hee Nam

Rice Div., National Yeongnam Agricultural Experiment Station, RDA, Milyang, 627-130, Korea

Material and Methods

1. Material

Rice cultivars : Indica(Tetep, IR36, IR 72), Tongil type(Gaya, Samgang, Milyang 23), Japonica(Hwayeong, Dongjin), Recalcitrant japonica(Palgong, Hitomebore, Koshihikari)

2. Method

- a). Anther stage : uninucleate pollen stage
- b). Callus induction : $N_6-Y_1+2\text{ppm}$ of NAA+0.5ppm of KI+2ppm of ABA
Plant regeneration : $N_6-Y_1+2\text{ppm}$ of KI+0.2ppm of IAA
- c). Cold pretreatment : 12°C, 15days, vacuum sealing with PE film

Results and Discussion

In spite of potential benefits of the anther culture, the low productivity of regenerated plants in some genotypes; e.g. *Tongil* and *Indica* is one of the major obstacles for practical use of this technique. This study was conducted for revising cold pretreatment method and carbon source for to increase the efficiency of anther culture in rice. The anther production is concentrated in a specific time of a season. Therefore, we need to improve anther storage methods for prolonging anther viability and convenience of inoculation works. A simple procedure of vacuum sealing of booting stage panicle using PE film not only prolonged anther viability more than 15days but also increased callus induction more than two folds. The most common carbon source, was switched to maltose as a new carbon source which has diglucose. Maltose increases callus induction 4. 6 folds higher than that of sucrose. Combining above two methods, callus induction is increased 28 to 58% in *Japonica*, 13 to 33 % in *Tongil* and 12 to 31% in *Indica* rice. Plant regeneration was increased 14 to 35% in *Japonica*, 10 to 20% in *Tongil* and 4 to 15% in *Indica* rice, respectively.