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Genotype effects on callus induction and plant regeneration from immature embryo of malting barley

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Objectives

In most of reports, efficient plant regeneration of barley appears to be genotype-dependent. The aim of this study was to select genotypes showing high level of callus induction and plant regeneration from immature embryo of 20 Korean malting barley varieties.

Materials and Methods

○ Materials

- 20 malting (two-row) barleys : Milyang74, Milyang121, Milyang122, Milyang114, Suwon380, Suwon382, Tonenijo, Azmagolden, Misatogolden, Kinuytaka, Asakagolden, Samdo, Shinho, Iljin, DaeA, Daeyoung, Namhyang, Sacheon6, Jinyang, Dusan29,
- explant : immature embryo

○ Methods

- Callus Induction : Wan and Lemaux medium with 3mg/L 2,4-D
- Plant Regeneration : FHG medium with 1mg/L BAP

Result and Discussion

Callus induction and plant regeneration from immature embryo of 20 malting barley varieties were examined. All varieties induced calli, but the range varied from 4.3 to 92.4%. Callus growth ability of the varieties ranged from 0.98 to 10.96 g per 1g callus during 1st sub-culture. Among the varieties examined, Milyang121 induced callus efficiently, and produced the highest number of green plants. In addition, Milyang121 showed the highest callus growth ability.

Table 1. Callus induction and plant regeneration of 20 malting barley varieties

Variety	ExplantsNo.	Callus Induction(%)	Regenerated Plant No
Samdo	97	12.4	7
MisatoG	85	40.0	7
M121	99	79.8	45
AsakaG	97	35.1	18
S382	103	37.9	22
Kinyuta	87	12.6	5
S380	93	4.3	10
Shiho	105	24.8	1
M114	90	44.4	10
Daeyoung	126	61.9	25
M74	107	72.0	40
Iljin	104	38.5	3
M122	101	39.6	5
DaeA	113	36.3	15
D29	96	31.3	6
Namhyang	104	51.0	5
Tonen	92	92.4	13
Sacheon6	127	26.0	3
AzmaG	89	33.7	11
Jinyang	116	26.7	2