

PENGARUH RADIASI NEUTRON CEPAT TERHADAP PEMBENTUKAN KALUS DAN PERTUMBUHAN KECAMBAH BEBERAPA JENIS PADI LOKAL DAN IR64.

Irwansyah *), Zurhan Mukhri *), Efni**), Popon Yulianti**), Monalita **), Widhorini**).

*)Pusat Penelitian Teknik Nuklir - Badan Tenaga Atom Nasional.

**)Fakultas MIPA - Universitas Padjadjaran Bandung.

ABSTRAK

PENGARUH RADIASI NEUTRON CEPAT TERHADAP PEMBENTUKAN KALUS DAN PERTUMBUHAN KECAMBAH BEBERAPA JENIS PADI LOKAL DAN IR64. Tujuh varietas padi lokal Indonesia (Bahbutong, Giliwung, Cisadane, Citanduy, Dodokan, Rantai emas) dan IR64 diradiasi dengan neutron cepat dalam beberapa dosis: 0,5 ; 1 ; 1,5 dan 2 krad. Biji padi yang sudah dibuang kulitnya disterilkan dengan alkohol (70%) selama 30 detik dan dengan NaOCl (0,5%) selama 45 menit sambil dikocok. Pembentukan kalus diinduksi pada media N6 yang diperkaya dengan 2.4-D (4 mg/l), sukrosa (20 g/l), dan agar Difco (0,8%). Kecambah ditumbuhkan pada media tanah dalam pot-pot plastik. Hasilnya menunjukkan, bahwa walaupun pembentukan kalus dan pertumbuhan kecambah dihambat oleh radiasi, namun media N6 yang diperkaya dengan 2.4-D adalah kurang cocok untuk menginduksi pembentukan kalus. Sehingga pola radiosensitivitas yang berdasarkan pembentukan kalus berada jauh di bawah pola radiosensitivitas yang berdasarkan pertumbuhan kecambah dari varietas-varietas tersebut di atas.

ABSTRACT

EFFECT OF FAST NEUTRON ON CALLUS FORMATION AND SEEDLING GROWTH OF SOME INDONESIAN RICE VARIETIES AND IR-64. Seven of Indonesian rice varieties (Bahbutong, Ciliwung, Cisadane, Citanduy, Dodokan, Rantai emas) and IR-64 were irradiated with fast neutrons at doses of 0,5 ; 1 ; 1,5 and 2 krads. Peeled seeds were sterilized with alcohol (70%) for 30 seconds and with NaOCl (0,5%) for 45 minutes on an orbital shaker. Callus were induced on N6 medium enriched with 2.4-D (4 mg/l), sucrose (20 g/l) and Difco agar (0,8 %). Other unpeeled seeds were grown on soil in plastic boxes. The results showed that although callus induction and seedling growth were inhibited by fast neutrons, N6 enriched with 2.4-D is not a favourable medium to induce callus formation so that radiosensitivity patterns based on the callus formation were for below those based on the the seedling growth of the above varieties.

DAFTAR PUSTAKA

1. KIKUCHI, F. and H. IKEMASHI, 1983. Semidwarfing Genes of High Yielding Rice Variety in Japan.
2. OONO, K., 1985. Putative Homozygous Mutation in Regenerated Plants of Rice. *Mol Gen Genet* 198: 377-384.
3. UKAI, Y. and A. YAMASHITA, 1987. Application of 10B Enrichment Method to Thermal Neutron Exposure of Barley seeds. Technical News No. 30. Institute of Irradiation Breeding, Ohimya-machi Ibaraki Japan .
4. RAVEN, P.H. and H. CURTIS, 1971. *Biological in Plant*. Worth Publishers Inc. 4th Edition.
5. DODDS, H.J., 1983. *Experiments in Plant Tissue Culture*. Cambridge University, Press - London.
6. INNOUE, M. and E. MAEDA, 1981. Stimulation of Shoot Bud and Plantlet Formation in Rice Callus Culture by Two Step Culture Method Using Abscisic Acid and Kinetin.
7. HEYSER, J.W., K.J. DEMOTT and M.W. NABORS, 1983. High Frequency Longterm Regeneration of Rice From Callus Culture. *Plant Sci Lett* 29: 175-182.
8. VASIL, I.K. and V. VASIL, 1980. Isolation and Culture of Protoplasts. *International Reviews of Cytology*. Suppl. 11B. Academy Press Inc.

9. DIXON, R.A., 1985. Plant Cell Culture. A Practical Approach. IRL Press.
10. TORYAMA, K. and K. HINATA, 1985 a. Cell Suspension and Protoplast Culture in Rice. *Plant Sci* 41: 179-183.
11. VASIL, I.K., 1987. Developing Cell and Tissue Culture System for The Improvement of Cereal and Grass Crops. *J Plant Physiol* 128: 193-218.
12. FUJIMURA, T., M. SAKURAI, H. AKAGI, T. NEGISHI and H. HIROSE, 1985. Regeneration of Rice Plants From Protoplasts. *Plant Tissue Culture Lett* 2: 74-75.
13. YAMADA, Y., Z.Q. YANG and D.T. TANG, 1985. Regeneration of Rice Plants From Protoplasts.
14. COULIBALY, M.Y. and Y. DEMARLY, 1986. Regeneration of Plantlets From Protoplasts of Rice *Oriza sativa* L. *Z. Pflanzenzucht* 96: 79-81.
15. KYOZUKA, J., Y. HAYASHI and K. SHIMAMOTO, 1987. High frequency Plant Regeneration From Rice Protoplasts by Novel Nurce Culture Methods. *Mol Gen Genet* 206: 408-413.
16. ABE, T. and Y. FUTSUHARA, 1985. Efficient Regeneration by Somatic Embryogenesis From Root Callus Tissue of Rice (*Oryza sativa* L). *J Plant Physiol* 121: 111-118.
17. ABDULLAH, R., E.C. COCKING and Y.A. THOMPSON, 1986. Efficient Plant Regeneration From Rice Protoplasts Through Somatic Embryogenesis. *Bio/Technology* 4:1087-1090.
18. TERADA, R., J. KYOZUKA, S. NISHIBAYASHI and K. SHIMAMOTO, 1987. Plant Regeneration From somatic Hybrids of Rice (*Oryza sativa* L) and Barnyard Grass (*Echinochloa oryzicola* Vasing). *Mol Gen Genet* 210: 39-43.
19. TSAY, H-S. and M. T. TSENG, 1979. Embryoid Formation and Plantlet Formation from Anther Callus of Sweet Potato. *Bot Bull Academia Sinica* 20: 117-122.
20. GRECO, B., O.A. TANZARELLA, G. CARROZZO and A. BLANCO, 1984. Callus Induction and Shoot Regeneration in Sunflower (*Helianthus annuus* L). *Plant Science Letters* 36: 73-77.
21. MIAH, AA., E.D. EARLE and G.S. KUSH, 1985. Inheritance of Callus Formation Ability in Anther Culture of Rice *Oryza sativa* L. *Theor Appl Genet* 70: 113-116.
22. PRAKASH, K.P., C.J. RAJU, M. CHANDRAMOHAN and R.D. IYER, 1985. Induction and Maintenance of Friable Callus From The Cellular Endosperm of *Cocos nucifera* L. *Plant Science* 40: 203- 207.
23. PICCIRILLI, M., F. PUPILLI and S. ARCIONI, 1988. Plant Regeneration From Protoplasts and Callus of Various Explants. *Plant Science* 55: 77-82.