Hibridisasi Somatik Tanaman Kentang (*Solanum tuberosum* L) Varietas Granola Dengan Varietas Tedjo MZ Melalui Fusi Protoplas

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Intisari

Kentang varietas Granola umum dibudidaya di Indonesia. Pertumbuhannya relatif cepat, adaptif terhadap faktor lingkungan, dan menghasilkan banyak umbi. Kentang Tedjo MZ merupakan varietas lokal Dieng, memiliki habitus besar, berumbi besar dan berwarna kuning, tahan terhadap penyakit kutu kebul, lyriomiza, Nematoda Sista Kentang (NSK), dan *Phytopthora*. Tujuan penelitian ini adalah menghasilkan varietas baru dengan sifat campuran antara varietas Granola dan Tedjo MZ melalui metode fusi protoplas. Tahapan metode fusi protoplas meliputi pemilihan sumber protoplas dari kalus dan daun melalui organogenesis, isolasi protoplas, induksi fusi protoplas, dan identifikasi fusan. Induksi organogenesis terbaik dilakukan dengan medium MS tanpa hormon menggunakan eksplan tunas. Induksi kalus terbaik dilakukan dengan medium MS kinetin 0,5 ppm dan NAA 2.5 ppm menggunakan eksplan batang *in vitro*. Sumber protoplas terbaik untuk isolasi protoplas adalah daun dan kalus. Protoplas daun hasil isolasi berbentuk bulat, berdiameter 10 – 20 µm dengan kloroplas tersebar didalam sitoplasma. Jumlah protoplas yang dihasilkan $1{,}59.10^6$ protoplas/ml dengan viabilitas 47,35%. Protoplas kalus hasil isolasi berbentuk bulat, berdiameter 20 – 30 µm, transparan karena tidak mengandung kloroplas. Jumlah protoplas yang dihasilkan $1{,}825.10^6$ protoplas/ml dengan persentase viabilitas 25%. Proses fusi terjadi secara spontan dan dengan penginduksi. Fusi spontan terjadi saat proses perendaman enzim. Fusi dengan penginduksi PEG 6000 35% menghasilkan fusan terbanyak. Fusan antar protoplas daun dan antar protoplas kalus diidentifikasi dengan membandingkan ukuran protoplas *single* dan ukuran fusan. Fusan antar protoplas daun dan kalus diidentifikasi dengan membandingkan ciri anatomik protoplas fusan dengan ciri anatomik protoplas indukan.

Kata kunci: Kalus, Organogenesis, Protoplast, Fusi protoplas, *Solanum tuberosum* var. Granola, *Solanum tuberosum* var. Tedjo Mz.

Somatic Hybridization of Potato Plant (*Solanum tuberosum* L) from Granola Variety and Tedjo Mz Variety through Protoplasts fusion Process

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Abstract

Granola varieties common cultivation in Indonesia. Granola growth relatively fast, adaptive to environmental factors, and produce lots of bulbs. Tedjo MZ is a local variety from Dieng. Large habitus and yellow bulbous, resistant to white flies disease, lyriomiza, potato cyst nematode (PCN), and Phytopthora. The aim of this research is to produce new varieties with combination characteristic of Granola and Tedjo MZ via protoplast fusion method. Stages protoplast fusion method includes selecting source of protoplast from callus and leaf through organogenesis, protoplast isolation, protoplast fusion induction, and fusan identification. The best medium for organogenesis induction is MS medium without hormones and use bud explants. The best medium for callus induction is MS medium kinetin 0,5 ppm and NAA 2,5 ppm and use stem explant in vitro. The best protoplast source for isolation are leaves and callus. Protoplast isolated from leaves are round, 10-20 μm diameter with chloroplasts scattered in the cytoplasm. Number of protoplast produced are 1,59.106 protoplast/ml with a viability 47.35%. Callus Protoplasts isolated are round shape, 20-30 μm diameter, transparent in colour because no chloroplast in cytoplasm. Number of protoplasts generated are 1,825.106 protoplast/ml with 25% viability percentage. Fusion process occurs spontaneously and with inducer. Spontaneous fusion occurs when the enzyme soaking process. Inducer fusion with PEG 6000 35% yield most fusan. Fusan from leaves protoplast and fusan from callus protoplast identified from their size as a single and as fusan protoplast. Fusan from leaves and callus protoplast identified by comparing anatomic character of fusan with its protoplast donor.

Keywords : Callus , Organogenesis, protoplasts, protoplast fusion, *Solanum tuberosum* var. Granola, *Solanum tuberosum* var. Tedjo Mz