

Intisari

Poliploidisasi pada umumnya lebih sering dilakukan dengan pemberian agen anti-mitotik sejenis kolkisina, dan umumnya diimpor dengan harga yang mahal, sehingga diperlukan agen anti-mitotik lain yang dapat diperoleh dari sumberdaya lokal di Indonesia. Terdapat tiga golongan agen anti-mitotik yang berbeda yang telah teridentifikasi, yaitu *taxanes*, *vinca alkaloids*, serta *colchicine*. Golongan *taxanes* hanya diperoleh dari kulit tanaman *western yew* yang tidak ada di Indonesia, sedangkan kolkisina dari tumbuhan *C. autumnale* L. dan *vinca alkaloids* dapat diperoleh dari tanaman tapak dara (*Catharanthus roseus* (L.) G. Don) yang sangat umum ditemukan di Indonesia. Sehingga tanaman tapak dara sangat berpotensi sebagai sumber agen anti-mitotik selain kolkisina. Penelitian dilakukan pada bulan Februari – November 2018 di Laboratorium Genetika dan Pemuliaan Tanaman, Departemen Budidaya Pertanian, Fakultas Pertanian, Universitas Gadjah Mada, Yogyakarta. Alat dan bahan yang digunakan dalam penelitian ini meliputi timbangan, *blender*, gelas ukur, gelas kimia, pengaduk, *rotary evaporator*, cawan petri, kaca preparat, kaca penutup obyek, mikroskop, perekam citra mikroskop Optilab, pinset, skalpel, tusuk gigi, *cup* plastik + tutup, peralatan tulis, kertas label, 1,2 kg daun tapak dara segar, 1 liter etanol 96%, akuades, asam asetat glasial, etanol absolut, *acetocarmine*, HCl 1N, dan umbi bawang merah (*Allium cepa* L.). Penelitian menggunakan Rancangan Acak Lengkap (RAL) faktor tunggal dengan 4 taraf perlakuan, diantaranya konsentrasi 0%; 0,05%; 0,1%; dan 0,15%, serta 3 ulangan. Berdasarkan penelitian yang telah dilakukan, diketahui bahwa ekstrak etanolat daun tapak dara dapat mempengaruhi baik dari segi jumlah dan karakteristik kromosom tiap sel tanaman bawang merah. Perlakuan ekstrak etanolat daun tapak dara mampu menginduksi kromosom menjadi poliploid meskipun tidak semua sel dapat menggandakan jumlah kromosomnya.

Kata kunci: poliploidisasi, anti-mitotik, tapak dara, kromosom, bawang merah.

Abstract

*Polyploidization is generally more often done by giving anti-mitotic agents such as colchicine, and is generally imported at a high price, so other anti-mitotic agents are needed which can be obtained from local resources in Indonesia. There are three different classes of anti-mitotic agents that have been identified, that is taxanes, vinca alkaloids, and colchicine. The taxanes group is only obtained from plant skins of western yew which do not exist in Indonesia, while the colchicine from *C. autumnale* L. and vinca alkaloids can be obtained from tapak dara (*Catharanthus roseus* (L.) G. Don) which is very common in Indonesia. So that plants are very potential as a source of anti-mitotic agents other than kolkhisina. Research was conducted in February - November 2018 at the Genetic and Plant Breeding Laboratory, Department of Agriculture, Faculty of Agriculture, Gadjah Mada University, Yogyakarta. The equipments and materials used in this research include scales, blenders, measuring cups, beakers, stirrers, rotary evaporators, petri dishes, glass preparations, object cover glass, microscopes, Outilab microscope image recorders, tweezers, scalpels, toothpicks, plastic cups + cover, stationery, label paper, 1.2 kg of fresh tapak dara leaves, 1 liter of 96% ethanol, aquades, glacial acetic acid, absolute ethanol, acetocarmine, 1N HCl, and shallot tuber (*Allium cepa* L.). Research used a single completely randomized design (CRD) with 4 levels of treatment, including a concentration of 0%; 0.05%; 0.1%; and 0.15%, followed by 3 replications. Based on the research that has been done, it is known that the ethanolic extract of tapak dara leaves can affect both in terms of the number and characteristics of the chromosomes of each shallot cell. The treatment of tapak dara leaves ethanolic extract can induce chromosomes to be polyploid even though not all cells can replicate the number of chromosomes.*

Keywords: polyploidization, anti-mitotic, tapak dara, chromosome, shallot.