

RELATIONSHIP BETWEEN GENOTYPE AND LOW TEMPERATURE ON CALLUS FORMATION AND ROOT DEVELOPMENT THROUGH ANTHR CULTURE OF BROCCOLI "*Brassica oleraceae* L.var.italica "

Nada M. Darwish and M.R. EL-Shami

Vegt. Res. Depts. Hort. Res. Inst. Agr. Res. Cent., Giza, Egypt

(Received: Oct. 29, 2009)

ABSTRACT: *Anther culture was used for studying the effect of chilling treatment (4°C for 24 hrs) of flower buds after sterilization on the callus differentiation in five hybrids of Broccoli Brassica oleraceae L.var.italica i.e., Sunrise and Dome from Holland, Landmark and Pinnacle from U.S.A., and Comanche from Japan.*

Flower buds were collected at the onset of flowering before elongation of the inflorescence axis from plants grown in the end of Dec. 2006 to end Jan. 2007 in the open field at Dokki location and exposed to low temperature (4°C) for 24 hrs after sterilization, in addition to the control treatment at room temperature (25°C).

Miller medium (1963) supplemented with (2ppm) of each of 2,4-D and IAA, and (1ppm) kinetin with (1ppm) yeast extract was used for anther culture. Moreover, 2,4-D was excluded and IAA beside kinetin concentration were decreased to (0.5ppm) in the medium used for differentiation.

The obtained results showed a rise in anther response produced callus, anther response produced root and callus response developed root characters reached 45.5, 10.8 and 22.4% for low temperature respectively, while they were 31.7, 5.6 and 15.3% under room temperature conditions. The variability in the response of anther culture for the studied characters differed significantly according to genotypic differences. Sunrise hybrid gave the highest values for the three studied characters (59.2, 21.2 and 35.3%), respectively. While the lowest values were (21.03, 4.0 and 8.6%) recorded in pinnacle, Comanche and Dome hybrids for anther produced callus, anther produced root and callus developed root characters, respectively.

The interaction effect showed that Sunrise gave the highest values of anther produced callus, anther produced root and callus developed root characters for low and room temperature, while, Dome showed a better response to cold pretreatment values for the three studied characters.

Key Words: *Anther culture, Broccoli, buds chilling, genotype, callus induction, root development.*