ABSTRACT

Genetic variability for resistance to Alternaria early blight disease (*Alternaria solani*) can be induced by chemical mutagens. The objective of this study was to induce mutation in tomato using ethyl methanesulfonate (EMS) in organogenic calli, followed by the clonal propagation of adventitious shoots in vitro, and to select lines resistant to Alternaria early blight by using patch inoculation technique. In the first experiment, different growth regulators combinations were tested on the production of organogenic calli. Organogenic callus induction was achieved using cotyledonary segments of tomato as explants. From the obtained different forms of callus, only the green compact and nodular callus produced multiple shoots was obtained in culture medium fortified with MS nutrients and 1 mg/l TDZ. In the second experiment, organogenic calli were treated with different concentrations of EMS solutions for different time interval. Untreated organogenic calli were used as control. After treatment, the organogenic calli were to induce multiple shoots on the same medium for 4 week. Induced shoots were elongated and rooted on the MS medium without plant growth regulators. Each tomato plant was in vitro propagation by shoot tip and nodal cultures, in order to create different clone lines. A total of 33 clone lines were obtained. The last experiment, each clone was determined for *Alternaria solani* resistance by using patch inoculation technique. The result showed that there were 26 clones demonstrated increased disease resistance to pathogen strain, after 4 days of infection. After 8 days of infection, there were only 3 clones which showed less than 65 % diseased leaf area whereas the other clones showed nearly 100 % diseased leaf area.