

Comparison of *in vitro* antimicrobial effect of ethanol and sodium hypochlorite on leaf and stalk leaf (*Echinacea purpurea*)

Abstract

Echinacea purpurea is one of the most important medicinal plants used in the pharmaceutical industry in the most developed countries. This herb has anti-viral properties, efficient materials, as well as strengthening their immune system. In this field, recent surveys for reaching to the wide and fast propagation method by means of tissue culture and with appointment of suitable method for disinfectant of leaf and leaf stalk fragments have been done. The experiment conducted in a completely randomized design with three replicates. Treatments included ethanol (0, 55, 70 and 80% for one minute) and sodium hypochlorite (0, 5, 10 and 15% for 15 min, respectively). Explants after the treatments were placed on MS medium. After 14 days, the most rate of contamination observed in the control treatments and treatments that have no ethanol and sodium hypochlorite. Minimum leaf contamination observed in combined treatment with 70-80% ethanol and 10-15% hypochlorite and the minimum contamination of leaf stalk in treatment of 80% ethanol with 10-15% of hypochlorite. Bacterial contamination was over than fungi infection. Although using of ethanol caused decreased of contamination but can cause phenolic effects in explant that in this case perhaps increase the time of treatments that include using ethanol and hypochlorite. Therefore, in this experiment suggested that for disinfectant applying 70% and 80% ethanol for leaf and leaf stalk explants, respectively, in less than one minute in addition with 10% sodium hypochlorite for less than 15 minutes.

Key word: *Echinacea purpurea*, disinfectant, ethanol, sodium hypochlorite