PRELIMINARY FORMULATION OF A BIOINSECTICIDE FROM *Azadirachta indica A. Juss* CELL CULTURE EXTRACT

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Introduction. *A. indica* or Neem is a well-known tree for producing secondary metabolites with insecticide activity. Nowadays, plant cell culture has permitted to produce this kind of substances in an environmentally friendly way. Neem metabolites have been used to control a plague of corn known as armyworm (*Spodoptera frugiperda)* that has the capacity to completely devastate fields.
On this investigation a preliminary formulation of bioinsecticide has been designed using ethanolic extract from Neem cell culture.

Methodology. *A. indica* cell culture has been cultivated according to Capataz *et al* 2007. Ethanolic extracts have been obtained according to modified methodology of Zapata and Trujillo 2006. The formulation consists of a mixture of water, oil and a surfactant, together with a photoprotector, active ingredient stabilizers, polietoxilated alcohols and the ethanolic extract of Neem suspension cells as active ingredient. Lab scale bioassays have been developed based on Capataz 2007 and Zapata and Trujillo 2006. Small bioassays in garden centre have been carried out to test the efficiency of a simple formulation. Preliminary formulation will be ready for being evaluated on field according to David and Carvajal 2010.

Results. The extracts were evaluated through lab scale bioassays and exhibited effectiveness between 25 and 75 % to inhibit the alimentation on *Spodoptera frugiperda,* Figure 1(a). The best emulsions were obtained with two surfactants. The best proportions of water/oil were 50/50 and 60/40 (% v/v). The emulsions underwent a reversible separation process characterized by the appearance of two emulsion oil/water and water /oil respectively, Figure 1(b). These emulsions were easily homogenized by manual shaking. Emulsion stability results are shown in figure 2. Small bioassays in garden centre showed that combination of water, oil, surfactant and ethanolic extracts of Neem as primary phase of the formulation, is effective to control the corn leafs consumption by armyworm.

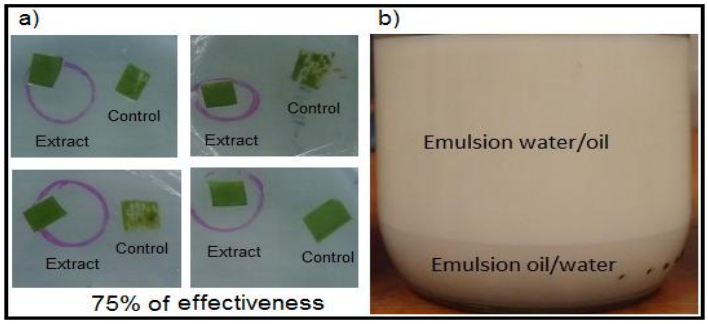

Fig1. a). Effectiveness of extracts in lab scale bioassays. b) Reversible separation process in emulsions.

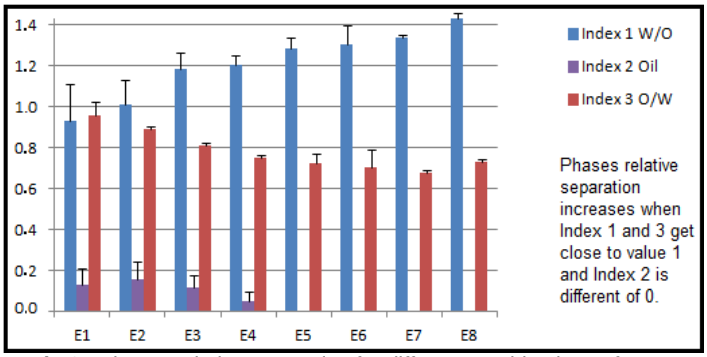

Fig 2. Phases relative separation for different combinations of surfactants and proportions water/oil.

Conclusions. The ethanolic extracts of Neem suspension cells have high effectiveness on *S. frugiperda.* Two evaluated surfactants presented the best results of emulsification. The best proportions water/oil were 50/50 and 60/40 (% v/v).Primary phase of formulation exhibited a great capacity to reduce the corn leafs consumption by *Spodoptera frugiperda* under garden centre conditions.

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