Comparison effect of botanical pesticides on first instar nymphs of the Australian mealybug, *Icerya purchasi* Maskell and its ladybird predator, *Novius cardinalis* Mulsant

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Australian mealybug, *Icerya purchase* Maskell in addition to citrus, is usually seen on silk flower, maple, broom tree, amasya, rose flower, pomegranate, figs, and many other ornamental and forestry trees. This mealybug attacks the leaf, fruit, and young and even old shoots of citrus, and feeds on the host plant sap. With honeydew excretion, it results in sooty mold growth on the plant surface and the reduction of the level of photosynthesis. This mealybug has three generations per year. Ladybird, *Novius cardinalis* Mulsant is one of the important predators of this pest which feeds on the mealybug at larval and adult stages. Chemical control is one of the common methods to control this pest. Due to the harmful effects of chemical insecticides, the use of botanical pesticides seems to be a safe and appropriate solution for controlling the pest. In this study, contact toxicity of different compounds on the first instar nymphs of *I. purchasi* and adult insects of predator ladybird was evaluated. The chemical treatments were included, washing up liquid 1%, Dayabon 0.5%, 0.6%, 0.7%, 0.8%, 0.9% and 1%, Palizin 0.15%, 0.2% and 0.25%, Palizin 0.15%, 0.2%, 0.25% + Sytrol oil 0.5%, Tondexir 0.2 and 0.3% + soap 0.1%, Dursban 0.2% and control (water). The experiment was carried out in a completely randomized design with three replicates for each treatment under conditions of 25±5°C and 60% relative humidity. In each replication, fifty 1st instar nymphs of *I. purchasi* and ten adult insects of ladybird was placed on each citrus leaf and were sprayed with 10 ml solution. After 24 hours, the number of live and dead insects were counted and the percentage of mortality was calculated. The data analysis of results showed that there is significant difference between different treatments. The highest percentage of mortality was observed in the treatments of Dayabon 0.9% and 1% and Tondexir 0.2 and 0.3% + soap 0.1% with 93, 99.33, 95 and 100%, respectively and there was no significant difference between these treatments. The lowest mortality (9%), in control and was followed by Palizin 0.15% with 27% mortality. In regard to predator ladybird, the highest percentage of mortality (83.33%) was observed in treatments of Dursban 0.2% and under 10% mortality was observed in other treatments. It seems that, based on the obtained results, treatments of Dayabon 0.8, 0.9 and 1% and Tondexir 0.2 and 0.3% + soap 0.1% had an effective control on the Australian mealybug with no adverse effect on its predator, *N. cardinalis* and can be replaced with hazardous chemical pesticides in pest control.

Keywords: citrus, *Icerya purchasI*, chemical treatments, mortality, Dayabon