

STUDY ON SYNERGISTIC ACTIVITIES OF ETHANOL EXTRACTS FROM PROPOLIS IN SOYBEAN OIL

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Introduction: An effective way to prevent oxidation of oils and fats is addition of antioxidants. However, the use of synthetic antioxidants for this purpose is gradually being discontinued due to their undesirable side effects. Therefore, extraction and production of natural antioxidants is a necessity. Propolis is a resinous substance collected by honeybees from various plant sources. More than 300 compounds have been reported as being constituents of propolis: polyphenols (flavonoids, phenolic acids and their esters), terpenoids, steroids, and amino acids. Our study goals were to assess the synergism potential of 5 samples of propolis extract is the Kurdistan Iran.

Materials and Methods : In this study, phenolic compounds propolis were extracted with ethanol (70%). Then the combination synergism effects of the ethanol extracts of propolis (EEP) of mixtures: 500 ppm EEP+200 ppm BHA (butylated hydroxyanisole) and 500 ppm EEP+200 ppm BHT (butylated hydroxy toluene) in two types of soybean oil (with and without of citric acid) at 35 °C and time intervals of 1, 6, 11 days were examined and compared for peroxide value (PV) and thiobarbituric acid (TBA) test. This study is a factorial experiment in a completely randomized design with 3 replications and the data obtained by Minitab and Mstat-C software were analyzed and drawing graphs by Excel software was used.

Results and Discussion : The results in three different time intervals showed that combination of the propolis extract and BHT show antagonist effects but the combination of propolis extract with BHA show synergistic effects. Peroxide and TBA value for 500 ppm ethanol extract propolis + 200 ppm BHA + citric acid levels of sample and control at eleven days was 34.97 (meq peroxide/kg oil), 0.085 (mg malondialdehyde/kg oil) and 86.63 (meq peroxide/kg oil), 0.160 (mg malondialdehyde/kg oil), respectively. Propolis extract has synergistic activity, which is related to its content of phenolic compounds and other antioxidants. Further research is required to get more information before it can be used routinely as a source of synergistic antioxidants activities.

Key words : propolis extract, Combined antioxidants effect, Soybean oil, Oxidation, citric acid