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Chemical Composition of Clove (*Eugenia caryophyllus*) Extracts and its Use to Increase Shelf-life of Refined Soybean Oil

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Clove is a spice that presents strong antioxidant potential. Antioxidants are compounds that act by inhibiting the effects of oxidation triggered by free radicals and oxidizing compounds. Natural antioxidants such as clove extract can work as a replacement for synthetic antioxidants such as BHA (tert-butyl-4-methoxyphenol) and BHT (2,6-di-tert-butyl-4-methylphenol) that present toxicity risks. Objectives of this study were to chemically characterize the extracts of clove bud (*Eugenia caryophyllus*) and to apply it in the soybean oil, as a substitute to synthetic antioxidants. Extraction of oils was performed using the techniques of supercritical extraction, hydrodistillation and ultrasound, in order to compare the efficiency of the extracts oil oxidation. Identification and quantification of compounds present in clove extracts were performed by gas chromatography analysis. Extraction composition profiles were compared to a commercial clove oil. The main compounds identified by the chemical profile of clove extracts in terms of percentage of relative area were eugenol, eugenil acetate and α -humulene. Refined soybean oil quality and its shelf-life increase with the addition of clove extracts were evaluate using the methods of acid index and moisture determination. Results showed that the use of clove extracts is effective in preventing the increase of acidity in soybean oil for seven days in oven at 60°C. The moisture analysis of the samples stored at room temperature showed that the use of clove extracts did not affect the humidity of soybean oil.