

**PHYSIOLOGICAL STUDIES ON ACTIVE
INGREDIENTS OF SAFFLOWER
PLANT (*Carthamus tinctorius* L.)**

By

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B.Sc. Agric. Sc. (Agric. Mechanization), Cairo University, 1995

M.Sc. Agric. Sc. (Agric. Engineering), Cairo University, 2002

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ABSTRACT

Ismail Mahmoud Ali Mohamed Shahat: Physiological Studies on Active Ingredients of Safflower Plant (*Carthamus tinctorius* L.). Unpublished Ph.D. Thesis, Department of Agricultural Botany, Faculty of Agriculture, Ain Shams University, 2010.

Two field experiments for safflower plant were carried out, at National Organization for Drug Control and Research in the Experimental Farm of Medicinal Plants at Kafr-Algabal Governorate Giza, Egypt. First experiment was laid out during two successive seasons of 2006/2007 and 2007/2008 in loamy sand soil to study the effect of compost (C) at levels of 5, 10, and 20 t/fed and rock amendment (R) at levels of 500 and 1000 kg/fed. Second experiment was laid out during two successive seasons of 2008/2009 and 2009/2010 in sandy loam soil to explore the response of safflower plants to foliar application with ascorbic acid (A) at concentrations of 100, 200, and 400 mg/l, humic substances (H) at concentrations of 2, 4, and 8 ml/l and active dry yeast (Y) at concentration of 2.5, 5 and 10 g/l as well as the control. The treatment of C₂₀R₁₀₀₀ had promoting influence in the most of vegetative parameters (plant height, number of branches/plant, number of leaves/plant, number of inflorescences/ plant, leaf area and dry weight). The same treatment gave the highest mean values of petal and seed yields (g/plant) also enhanced active ingredients (carthamin, carthamidin, and oil). Treatment of C₂₀ gave the highest value of unsaturated fatty acids and oil quality. Ascorbic acid at 100 mg/l had improved petal and seed yields, oil content and oil yield. The treatment of H₄ gave the highest carthamidin content, while Y₁₀, H₂, H₄ gave higher carthamin compared with control. H₂ and Y₅ gave higher values of total unsaturated fatty acid, while Y₅ gave the highest value of oil quality.

Key words: Safflower, compost, rock amendment, yeast, ascorbic acid, humic substances, carthamin, carthamidin, oil, fatty acid.

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