Biotechnological production of secondary metabolites in callus cultures is an attractive alternative to the extraction of the whole plant material. Elicitation is recognized as the most practically feasible strategy for increasing the production of desirable secondary compounds from cell, organ, and plant systems. In recent years, studies on melatonin in plants have been increased and become very interesting. Melatonin (N-acetyl-5-methoxy-tryptamine) is an indoleamine neurohormone and it has since been identified playing important roles in many plant responses including growth, reproduction, development, and stress. There is not any research on the effect of melatonin on enhancing essential oils as an elicitor. Sage, *Salvia officinalis* L. (Lamiaceae) is an aromatic perennial plant and has antibacterial, antiviral, anti-inflammatory, antihydrotic and antioxidant properties. This study describes the effects of melatonin phytohormone on essential oils accumulation in callus culture of *Salvia officinalis* L. Calli were obtained from sage leaves on MS media added 2.0 mg/l naphthaleneacetic acid (NAA), 1.0 mg/l. benzylaminopurine (BAP) and different concentrations of melatonin (0.0, 100.0 and 200.0 µm). Essential oil content was measured by the high performance liquid chromatography (HPLC). After 6–7 weeks the percentages of callus induction were determined from all treatments. But, melatonin decreased the calli production of sage explants gradually. However, accumulation of essential oils changed by various percentages in which melatonin presented medium. Also, quantification of polyphenols by HPLC exhibited changes in rosmarinic acid in callus compared with control group. Besides, the levels comparable to those founds in leaves of naturally growing plants.

**Keywords:** Callus culture, Essential oil, Melatonin, Sage, *Salvia officinalis* L.