Mediterranean part of Turkey. In our study, it was aimed to determine antioxidant activities of *Satureja* *jacilicica* essential oil in butter and in vitro. Antioxidant activities of the oil at different concentrations were evaluated using the 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging and phosphomolybdenum methods. Also, the essential oil with 0.5%, 1.0% and 2.0% were added in butter as antioxidants and were assayed during 60 days of storage of butter at +4 and +20 degrees C. For this reason, it was analyzed peroxide value, pH, titratable acidity and total lactic acid bacteria as a criterion to assess the antioxidant activity of essential oil at 20th, 40th and 60th days of storage. Antioxidant activity was found as IC50 = 32.02 ± 0.58 mg/ml and antioxidant capacity was 101.16 ± 3.22 mg/ml by phosphomolybdenum methods. On the other hand, the essential oil of *S. cilicica* exhibited a strong antioxidant activity in butter. Antioxidant activities of oils were higher when the essential oil concentration was increased. In addition to the peroxide value, pH, titratable acidity and number of viable lactic acid bacteria were compared to the control. In addition, titratable acidity and total number of lactic acid bacteria of samples stored at +20°C were determined higher than the other storage temperatures during the storage time. According to our results, the essential oil of *S. cilicica* could be used as both natural antioxidant and aroma agent in butter.