In the present study, the chemical composition and the antifungal properties against *Saprolegnia parasitica* (*in vitro and in vivo*) of the essential oils of thyme (*Satureja cuneifolia*) from Mediterranean region of Turkey were evaluated for the first time. The composition of oils was analysed using gas chromatography/mass spectrometry (GC/MS). The major constituents of oil of *S. cuneifolia* were cavracrol (46.84%) and cymene (16.90%). Antifungal effects of *S. cuneifolia* essential oil against *S. parasitica* strains (A1 and E1) were detected by disc diffusion and tube dilution assays. The antifungal effect of *S. cuneifolia* was determined to be stronger against *S. parasitica* E1 isolate (MIC 50 μL mL⁻¹, MLC 250 μL mL⁻¹) compared with *S. parasitica* A1 isolate (MIC 50 μL mL⁻¹, MLC 500 μL mL⁻¹). Following *in vitro* assays, effective doses of *S. cuneifolia* for disease control in rainbow trout eggs experimentally infected with *S. parasitica* were investigated. For this aim, infected eggs were treated with the essential oil (0, 5, 10, 20 and 50 ppm) during incubation period (21 days) after fertilization. Formalin (5 mL L⁻¹) was used as positive control. Hatching rate of eggs at the end of incubation period were calculated. The highest hatching rates were recorded in *S. parasitica* E1 strain at 5 and 10 ppm concentrations of *S. cuneifolia* and in *S. parasitica* A1 strain at 10 and 20 ppm (*P* < 0.05).