The stevia leaves are used as natural sweeteners, but they have more than one hundred phytochemicals. *Alicyclobacillus acidoterrestris* is an aerobic bacillus, Gram-positive, spore-forming, deteriorating acidic foods like citrus juices. The aim of this study was to evaluate the antibacterial activity of leaf extracts of *Stevia rebaudiana* on *Alicyclobacillus acidoterrestris*. The leaves were dried at 50 °C and 100g was used to 500 mL of solvent (Hexane, Dichloromethane, Ethyl acetate, and Methanol-water 90:10). Extraction was performed in the cold (4 ºC) for 24 hours after that with each solvent was evaporated. One milligram of each solid was diluted with 50 µL of DMSO and added 450 µL of broth BAT. In a 96 well plate was added 100 µL of broth in each well and BAT performed at serial dilutions, starting with 100 µL of each extract, yielding concentrations of 1,000 to 0.98 µg/mL. The inoculum was added at a concentration of 4 logs. The plate was incubated at 45 °C for 24 hours. The wells that showed no growth and the first well was plated with growth medium BAT agar. Then the plates were incubated at 45 °C for 24 hours. The bactericidal activity was observed for the extraction with Dichloromethane (62.5 µg/mL), Methanol (125 µg/mL) and Hexane (500 µg/mL). The bactericidal activity of these extracts was 250 µg/mL for the extraction with dichloromethane and 1000 µg/mL for Methanol and Hexane. The extraction with Dichloromethane had good bacteriostatic and bactericidal activity and the extraction with methanol had good bacteriostatic activity.