The invention relates to a method for increasing the amount of steviol glycosides in plants of sweet stevia (*Stevia rebaudiana* Bertoni) by treating the seeds of stevia with condenser-type cold plasma before sowing. The seeds are placed in a single layer in a sterile glass of 10 cm diameter Petri dish placed between two parallel cooled 120 mm diameter copper electrodes arranged in an airtight stainless steel vacuum chamber of 0,053 m³ on the lower electrode. A vacuum of 100-200 Pa is created in the chamber. Working gas - residual air. The distance between the seeds and the upper plasma electrode is 1.7 cm. Seeds are processed for 0.5-7 minutes by discharge of 0.6-0.7 W/cm² power density. The treated seeds are stored at 20-25 °C in the dark for 6 days, thereafter they are sown and the plants are grown under normal conditions. Using the technology described in the present invention such as short-term treatment of stevia seeds with condenser-type cold plasma, it is possible to increase significantly the individual steviol glycosides (from 1.5 to 7 times) as well as their total content in the plant, even in cultivars with high content of steviol glycosides.