Medicinal plants have been used around the world to treat a wide range of disorders, mainly in developing countries and primitive cultures. Most people living in these areas are almost completely dependent on traditional medical practices for their primary health care needs and higher plants are known to be the main source for drug therapy in traditional medicine. Essential oils (EO) from a broad spectrum of plant species have shown antinociceptive, anti-inflammatory, wound healing and antimicrobial activities. Leaves of Croton adamantinus have been used to treat inflammation and skin wounds in the semi-arid area of the Northeast of Brazil. OBJECTIVE AND METHODS: In order to evaluate if the essential oil (EO) was responsible for the claimed activities; antinociceptive, wound healing and antimicrobial tests were carried out. Twenty constituents were identified in C. adamantinus EO by GC–MS, 1 H-NMR and 13 C-NMR, the major compounds being methyl-eugenol (14.81 %) and 1,8-cineol (13.74 %). Antinociceptive activity was evaluated by the formalin test and the abdominal contortion assay in mice. RESULTS: The EO (50 and 100 mg/kg) decreased the licking time of both phases of the formalin test when compared to the vehicle, but not to morphine (7.5 mg/kg). In the abdominal contortion assay, the EO (50 and 100 mg/kg) reduced the number of contortions compared to the vehicle and to indometacin (10 mg/kg). The wound healing activity was verified also using two experimental models: excisional wound and dead space. Topical treatment with the EO (1 %) increased the wound contraction from the third day of treatment (compared with nitrofurazone 0.2 %), while systemic treatment (50 mg/kg/day) increased granulation tissue formation and reduced the water content. C. adamantinus EO also showed antimicrobial activity against Staphylococcus aureus in disk diffusion method. These results corroborate the ethnobotanical use of this species by Brazilian population. CONCLUSION: This study concluded that the Croton adamantinus Mull. Arg. essential oil has antinociceptive and wound healing activities and hereby corroborates its use in folk medicine of Northeast of Brazil.