Seaweeds are considered an important source of bioactive molecules. The genus *Gracilaria* is widely spread into tropical and temperate regions and is one of the largest genera in the Gracilariacea family. The increasing commercial interest in agar from *Gracilaria* demands a chemical elucidation of these polymers and improved knowledge of the relationship between molecular structure and functional properties. In this work, chemical analysis, FT-IR, 1 and 2D NMR spectroscopy of $^{13}$C and $^1$H were used to determine the chemical structure of the polysaccharide obtained from the red seaweed *Gracilaria caudata*. Specimens of the red seaweed *Gracilaria caudata* were collected in August 2008 from the Atlantic coast at Northeast of Brazil (Pacheco Beach, Caucaia – Ceará). The marine red alga *Gracilaria caudata* was submitted to aqueous extraction of their polysaccharides for 2h at 100°C. The polysaccharide fraction (PGC) presented a recovery of 32.8%. The sulfate content of PGC, calculated by S%, is 1% and the degree of sulfation accounts for 0.13. High-Performance Size-Exclusion Chromatography demonstrated that PGC consists of a high molecular weight polysaccharide ($2.5 \times 10^5$ g mol$^{-1}$). Chemical analysis of PGC were performed by elemental microanalysis, infrared (FT-IR) and nuclear magnetic resonance (NMR, 1 and 2D) spectroscopy. The structure of PGC is mainly constituted by the alternating residues 3-linked-$\beta$-$\alpha$-galactopyranose and 4-linked-3,6-$\alpha$-$\alpha$-galactopyranose-6-methyl or pyruvylated $\beta$-$\alpha$-galactose residues and in the 4-linked unit for 3,6-$\alpha$-$\alpha$-anhydrogalactose-2-methyl or $\alpha$-$\alpha$-galactose-6-sulfate.