We use a holographic model of quantum chromodynamics to extract the equation of state (EoS) for the cold nuclear matter of moderate baryon density. This model is based on the Sakai-Sugimoto model in the deconfined Witten’s geometry with the additional point-like D4-brane instanton configuration as the holographic baryons. Our EoS takes the following doubly-polytropic form: \[ \epsilon = 2.629A^{-0.192}p^{1.192} + 0.131A^{0.544}p^{0.456} \] with \( A \) a tunable parameter of order \( 10^{-1} \), where \( \epsilon \) and \( p \) are the energy density and pressure, respectively. The sound speed satisfies the causality constraint and breaks the sound barrier. We solve the Tolman-Oppenheimer-Volkoff equations for the compact stars. We reach the reasonable compactness for the proper choices of \( A \). Based on these configurations we further calculate the tidal deformability of the single and binary stars. We find our results agree with the inferred values of LIGO/Virgo data analysis for GW170817.