Extremophilic bacteria proliferate and perform all their metabolic functions in hazardous environments (Deive et al.,2012). In arid environments like the Dead Sea, lakes in Antarctica, and Cuatro Cienegas (Mexico), halophilic bacteria can survive (Marhuenda-Egea et al., 2002; Souza et al., 2006; de Lourdes Moreno et al., 2013; Edbeib et al., 2016). Some of these microbes can tolerate 30% w/v NaCl. Halophilic bacteria are biotechnologically adaptive because they can survive low water and high salinity (Jin et al., 2019). They also produce surface-active chemicals, extracellular and intracellular enzymes, and other molecules (Yin et al., 2015; Barbachano Torres et al., 2020; Elshafey et al., 2022). Amphiphilic biosurfactants are produced by several organisms with hydrophobic and hydrophilic tails (Khemili-Talbi et al., 2015). “Alternative surfactants” fared better than synthetic biosurfactants. Strong biodegradability, tissue selectivity, minimal harm to mammalian cells, minimal irritancy, effectiveness at high or low pH levels, suitability for mass production, and ecological acceptability (Shekhar et al., 2015). Biosurfactants are used in bioremediation of oil-contaminated environments, cosmetics, agriculture, and pharmaceuticals (Ariech and Guechi, 2015). Since extremophiles have unique adaptations to hostile environments, searching for new biosurfactant molecules is promising (Sarafin et al., 2014). Despite the few investigations on biosurfactant-producing species in hypersaline settings, halophilic archaea and bacteria have become more popular for biosurfactant synthesis. Archaea and other halophilic microorganisms can remove and break down complex hydrocarbon molecules in hypersaline environments. This is both cost-effective and good for the environment. In harsh conditions, microorganisms use organic contaminants as their only carbon source to make biosurfactants, which help with bioremediation (Torregrosa-Crespo et al., 2017). Soil, oil fields, seawater, and marine sediments have all been shown to have microorganisms that create biosurfactants. Oil-deposit microorganisms are better able to survive in harsh environments than those of other oil resources.