



## Production of Polyhydroxyalkanoates with extreme Halophilic Microorganisms.

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**Key words:** halophytes, plastics, polyhydroxyalkanoates

**Introduction.** Biodegradable materials with similar properties to plastics or elastomers derived from petroleum are in great demand for a variety of applications. (1) The polyhydroxyalkanoates (PHAs) are natural polymers synthesized by microorganisms, possess such desired features. Industrial production of PHAs is currently achieved using recombinant *Escherichia coli* (2). Nevertheless, recent research on halophiles, salt requiring microorganism, has shown a remarkable potential for biotechnological production of PHAs.

**Objective.** Isolate, identify and production of polyhydroxyalkanoates by microorganisms obtained in the red salt ponds.

**Methods.** Samples are collected in the area of the colored salt ponds. For the growth of microorganisms use the glucose sea water, extract yeast culture medium liquid. Solid media was used the rate of 15 g / l of agar. To observe PHAs intracytoplasmic granules formed in microorganisms staining method using Nile blue and Nile red were used. For molecular identification Wizard® Genomic DNA extraction purification kit was used, then proceeded to the 16S region amplification using universal primers Sequence IDT-D30F, D33R, D34R for Archaea. PHA production was estimated according to Amutha Santhanam (2010)

**Results.** In order to know the bacterial wall morphology we performed Gram staining of the samples that were isolated all the 14 isolates were Gram negative. The 14 strains were related to a Archaea. All strains were positive for Nile Red staining (Figure 1) and Nile Blue (Figure 2)

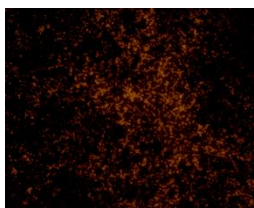


Fig.1 Nile Red



Figure 2. Nile Blue

In order to find out the efficiency of organism to produce PHA, the 14 microorganism were grown under nitrogen limiting condition and the sample was taken after 48,96 and 144 h. The strains JCCOL50.3 produced higher amount of PHA compared to all strain. The concentrations of the polyhydroxyalkanoate some strains are summarized in figure 3.

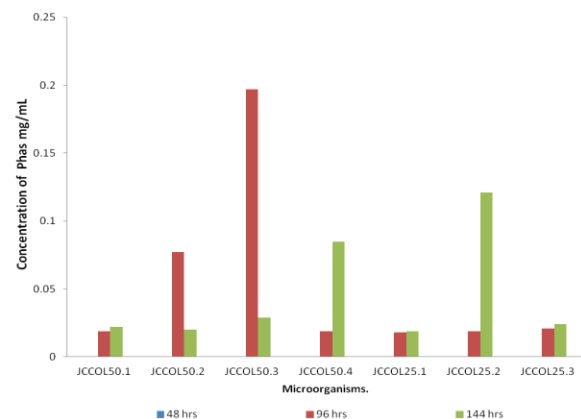


Figure 3. Production of PHAs

**Conclusions.** It was found that the 14 strains studied in the project that were collected in the red salt ponds in the state of Yucatan are producing PHAs, Gram negative and with potential application in industrial processes.

**Acknowledgements.** A DGEST for project financing expertise and CONACYT for scholarship

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