Effect of diluent on succinic acid extraction from artificial solution and fermentation broth

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Succinic acid is a dicarboxylic acid produced as an intermediate of the tricarboxylic acid cycle (TCA) and also as one of the fermentation products of anaerobic metabolism. Among several alternatives for the recovery of succinic acid, reactive extraction is effective and economic separation process. Although the amines have good extractabilities for succinic acid they must always be used in the form of solutions in organic diluents due to their physical properties such as high viscous and corrosive property. Diluents can be classified into active and inactive diluents. To extract succinid acid from artificial solution and fermentation broth, the secondary, tertiary and quaternary amine extractant were used. In the case of active diluents such as MIBK and 1-octanol, distribution coefficient of succinic acid increased in the order secondary amine > tertiary amine > quaternary amine. However, distribution coefficient decreased with all amine species in the inactive diluent of Kerosen. Active diluents are good solvating medium for acid-amine complex because they have functional groups. Thus, active diluents have higher distribution of the succinic acid into the solvent phase than inactive diluents.