

The Purification and Comparative Analysis of Hemoglobin from Animal Bloods

P. Khan, W. K. Chen, and C. J. Lee

Department of Chemical Engineering

National Tsing Hua University

Key Words: Hemoglobin, Bio-separation Technique, Electrophoresis, Isoelectric Focusing

ABSTRACT

The hemoglobin (Hb) existing in animal bloods is the perfect and indispensable carriers in the physiological oxygen transport process. Separation and purification of Hb from mammalian bloods and reprocess into oxygen carrying red blood cells (RBC) is a plausible path towards the development of artificial blood substitutes.

In this report, we investigated various methods for separation and purification of Hb from animal bloods with an intention to establish the optimal and highly reliable purification technologies.

Also, the Hb obtained from various sources, i. e., bovine, pig and human bloods were freeze - dried and made into pure Hb powders and carefully stored. These purified Hbs were analyzed and compared using simple and fast analytical methods, e. g., electrophoresis, isoelectric focusing, and spectroscopy, to study the characterization of protein molecular structure and the preliminary oxygen carrying capability. Further investigation along this line will enable us to realize the ultimate objectives of development for artificial RBC substitutes.