ID: 7191
Congress: 1st Tabriz International Life Science Conference and 12th Iran Biophysical Chemistry Conference
Title: Reconsidering the solvent based approach to remove albumin from serum
Authors: Z. Shafie1, F. Shekari1, M. Habibi-Rezae1
Abstract: Introduction: Proteomic analysis of sera and the quest for identifying serum proteins as disease markers have often been hampered by the predominance of several highly abundant proteins including albumin and immunoglobulins. We have been able to refine the albumin depletion protocols and establish a albumin removal method using trichloroacetic acid.

Method: the efficacy of polarity based solvent effect was studied and changes in major protein bands were monitored by 1-D SDS-PAGE followed by conventional densitometry.

Result: In this report, a view on the theoretical
basis of the TCA/organic solvent methods has been offered through introducing new parameters which enable us to predict the result of precipitation and choose the best way to handle different kind of samples to improve their 2D map resolution. A new parameter as "signed magnitude of the hydrophobicity change" in response to the pH lowering for an amino acid residue is defined and exploited to categorize standard amino acids in three distinctive groups based on the mode of hydrophobicity change during pH dropping from 7 to 2. Another new parameter as "discriminative factor" is employed to examine the abundant constitutive proteins of the serum for their hydrophobicity change tendency upon pH lowering which is considered as an intrinsic protein characteristic parameter. Among serum abundant proteins only three fatty acid binding proteins have the positive values and serum albumin is successfully highlighted as an exceptional serum component which tends to be removed in organic solvent.
Conclusion: The modified TCA/dioxan approach can offer a rapid method for purifying albumin from serum and make it possible to remove albumin masking of the low abundant proteins.
KEYWORDS: Albumin removal / Trichloroacetic acid precipitation / Discriminative factor / signed magnitude of hydrophobicity change.

Presentation: Poster