The Comparison of Acetic Acid and Strontium Chloride Procedures for Extraction of Hemin

Alavi,A. (MD)
Hakiman Shargh Research Institute

Moradi,Sh. (BSc)
ChemistHakiman Shargh Research Institute

Mirkheshti,N. (MD)
Hakiman Shargh Research Institute

Ghadiri,A. (BSc)
ChemistHakiman Shargh Research Institute

Hadizadeh,F. (MD)
Hakiman Shargh Research Institute

Corresponding Author:
Alavi,A.

E-mail: alavi@pharm.mui.ac.ir

Abstract

Background and objectives: Hemin is a porphyrin compound derived from hemoglobin, the precursor of other porphyrin hemoglobin derivatives and the raw material of Hematin. Since hemin is widely used in medicine, we decided primarily to synthesize this substance in Laboratory and to determine the best way of hemin extraction from untransfused and expired blood units.

Materials and Methods: In the first method, Glacial acetic acid and sodium chloride were added to citrated blood and hemin crystals were extracted by means of cooling. Finally, the obtained product, by visible spectrophotometer and Infrared Spectrophotometer, was compared to standard samples. Fur thermore, citrated blood, citrated blood hemolysed by distilled water and citrated blood washed by normal saline were used comparatively as a raw material to produce Hemin. The second method was performed by adding Strontium, acetic acid and acetone to blood samples and then after precipitating Hemin crystals they were washed and dried with acetone.

Results: The presence of functional groups in Hemin samples, analyzed by infrared Spectrophotometer, indicates the production of this compound. The results of visible Spectrophotometer in comparison with control samples and the results of samples weighting demonstrates high efficiency of extraction stages and the purity of obtained compound.

Conclusion: The use of intact citrated blood produces more Hemin than the other kind of Citrated blood samples. Moreover, acetic acid with citrated blood, without any processing on blood, is the best way for Hemin production.

Key words: strontium, Hemin, Blood, acetic acid, extraction