

Drug Chemistry Section
Drug Chemistry Procedure Manual
Effective Date: September 1, 1996

Name of Procedure:

Extractions and Separations
Extraction of Amphoteric Compounds Including Morphine, Hydrocodone and other Alkaloids

Suggested Uses:

This is a general extraction procedure used to isolate and purify various amphoteric compounds.

Apparatus Needed to Perform Procedure Including Preparation of Reagent:

Fume hood
Gloves
Eye protection
Laboratory coat
Pipet with bulb
Graduated cylinder
Glass stirring rod
pH Test paper
Separatory funnel
Funnel
Sodium Bicarbonate
Chloroform
Isopropanol
Ethyl Ether
5% Hydrochloric Acid Reagent

Formula for Preparing Reagent:

5% Hydrochloric Acid Reagent

1. Measure 95 milliliters of water in a 100 milliliter graduated cylinder.
2. Bring to total volume (100ml) with concentrated hydrochloric acid.
3. Pour into a reagent bottle.
4. Properly label reagent bottle.

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Formula for Preparing Reagent (continued):

3:1 Chloroform/Isopropanol Reagent

1. Measure out 60 milliliters of chloroform.
2. Measure out 20 milliliters of isopropanol.
3. Combine the chloroform and isopropanol.
4. Pour solution into a reagent bottle.
5. Properly label reagent bottle.

Expiration Date of Reagent:

Reagent may be used until depletion if stored in an airtight reagent bottle.

Application of Procedure on Evidence:

1. Dissolve sample in 5% hydrochloric acid reagent.
2. Extract with ethyl ether and discard ether washings.
3. Add sodium bicarbonate until a pH of 8 is obtained. Check with pH test paper.
4. Extract the basic solution with the 3:1 chloroform/isopropanol reagent.
5. The solvent extract may be dried using magnesium sulfate or sodium sulfate.
6. Evaporate the solvent using dry nitrogen and heat to obtain the free base form of the compound.

Safety Concerns:

Ethyl Ether and Isopropanol are flammable solvents. Chloroform should be used in a fume hood.

Literature References:

Shriner, R.L., Fuson, R. C., Curtin, D. Y., **The Systematic Identification of Organic Compounds**, 5th Ed. , Wiley & Sons Inc., New York 1964, pp. 67-85, 88-106.

Butler, William P., **Methods of Analysis**, IRS Publication #341, December 1966, p. 64.