

Color tests

Cobalt thiocyanate (Van Urk) for cocaine

Dille –Koppanyi for barbiturates

Duquenois-Levine for THC

Mandelin (Mecke) for basic drugs

Marquis for aromatics

Nitric acid for basic drugs

pDMAB (Ehrlich) for LSD

Ferric chloride for acetaminophen

Frohde for basic Drugs

Mecke for Basic drugs

Zweikker for barbiturates

Simon for secondary amines

Of these tests, the cobalt thiocyanate, Duquenois-Levine, Marquis and the p-DMAB tests are used in 90% of all crime labs



1. Clark's Isolation and Identification of Drugs, Second Ed., The Pharmaceutical Press, 1986, pp.128-147

2. Kovar, K.A.; Laudszum, Chemistry and Reaction Mechanisms of Rapid Test for Drugs of Abuse and Precursor Chemicals, SCITEC/6, February 1989, v.89-51669.



Marquis Test for substituted aromatics

- Versatile
 - Lots different colors possible
 - Complex chemistry (not understood)
 - Possible polimerisation
- 100 mL conc. Sulfuric to 5 mL 40% formaldehyde



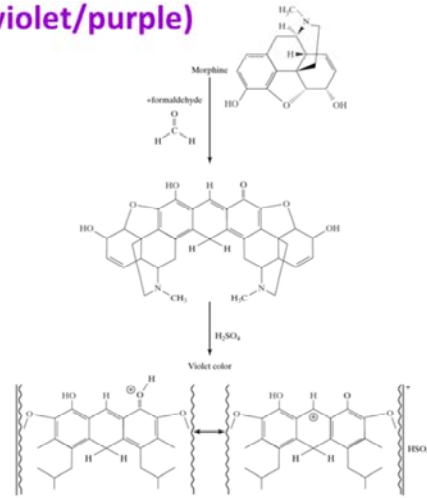
Marquis Test for substituted aromatics

- General test for **Opiates (violet/purple)**

- Heroin
- Morphine
- Codeine

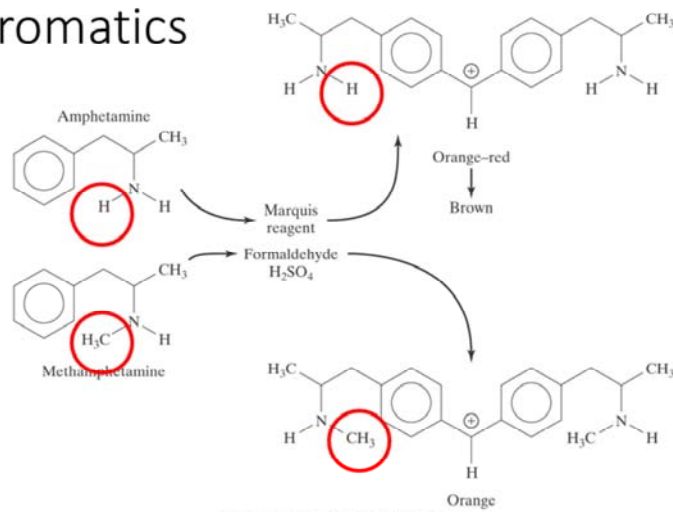
- “False positives”

- Amphetamines
- Ephedrine
- Meperidine



Oxonium carbonium
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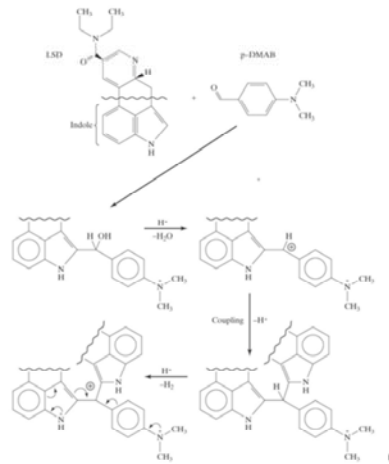
Marquis Test for substituted aromatics



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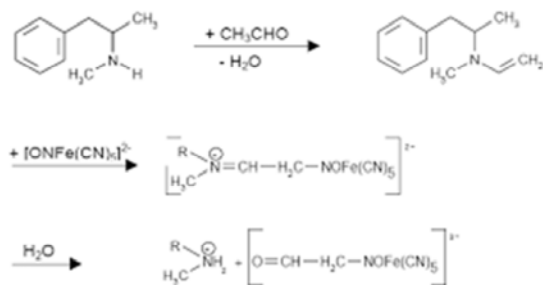
Ehrlich's Test (p-DMAB) for LSD

- P-dimethylaminobenzaldehyde + HCl + ethanol
 - Or P-dimethylaminobenzaldehyde + H₂SO₄ + FeCl₃
- Reacts with indols
 - **Violet/Blue**



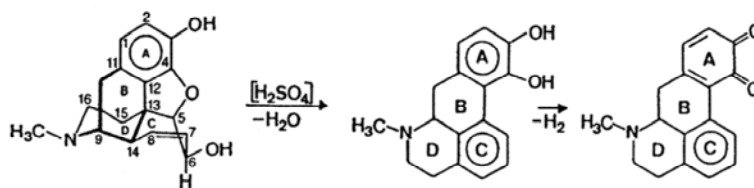
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Simon-Awe Reaction – Secondary Amines (Amphetamines, Meth)



1. Clark's Isolation and Identification of Drugs, Second Ed., The Pharmaceutical Press, 1986, pp.128-147
2. Kovar, K.A.; Laudszum, Chemistry and Reaction Mechanisms of Rapid Test for Drugs of Abuse and Precursor Chemicals, SCITEC/6, February 1989, v.89-51669.

Mecke's Reaction - Morphine



1. Clark's Isolation and Identification of Drugs, Second Ed., The Pharmaceutical Press, 1986, pp.128-147
2. Kovar, K.A.; Lauszum, Chemistry and Reaction Mechanisms of Rapid Test for Drugs of Abuse and Precursor Chemicals, SCITEC/6, February 1989, v.89-51669.

Cobalt thiocyanate for cocaine

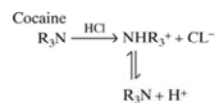
- 2% Cobalt thiocyanate in aqueous solution

- **blue precipitate**

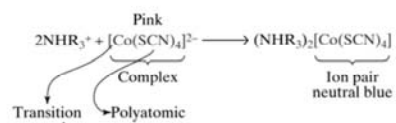
- Procaine also tests positive



www.thegooddrugsguide.com/cocaine/basics.htm

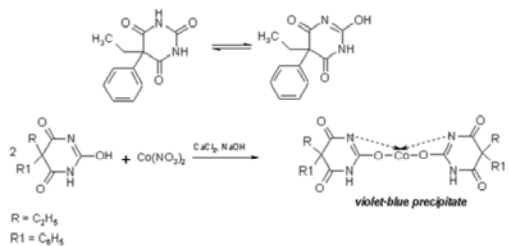


Base, neutral → Cation water soluble
water insoluble



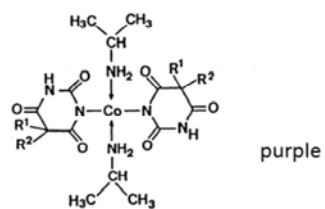
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Cobalt Nitrate for Barbituates



Dille-Koppanyl Reaction for Barbituates

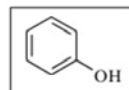
Isopropylamine
Co(II)Acetate



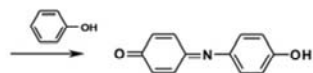
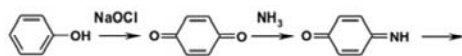
1. Clark's Isolation and Identification of Drugs, Second Ed., The Pharmaceutical Press, 1986, pp.128-147
2. Kovar, K.A.; Laudszum, Chemistry and Reaction Mechanisms of Rapid Test for Drugs of Abuse and Precursor Chemicals, SCITEC/6, February 1989, v.89-51669.

Phenol

Identification



- Indophenol test (blue colour):



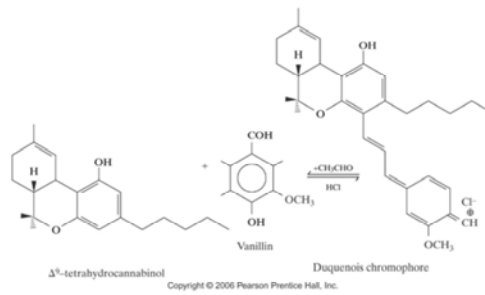
- Ferric (III) chloride test (violet colour):



1. Clark's Isolation and Identification of Drugs, Second Ed., The Pharmaceutical Press, 1986, pp.128-147
2. Kovar, K.A.; Lauszum, Chemistry and Reaction Mechanisms of Rapid Test for Drugs of Abuse and Precursor Chemicals, SCITEC/6, February 1989, v.89-51669.

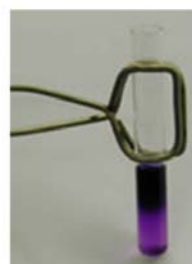
Duquenois-Levine for marijuana (cannabinoids)

- Acidified vanillin, then add chloroform
 - purple chloroform layer
 - Other cannabinoids go red in chloroform layer



Duquenois-Levine for marijuana (cannabinols)

- A. 1g vanillin in 50 ml EtOH w/ 0.15 ml acetaldehyde
 - B. conc HCl
 - C. chloroform
- TEST: mix equal quantities of A and B, then add larger volume of C



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