*Exp.No. 2*

***[Lab.3]* Tropane Alkaloids**

 **Daturastramonium**, known by the [common names](http://en.wikipedia.org/wiki/Common_names) **Jimson weed** or **datura**, is a plant in the[***Solanaceae***](http://en.wikipedia.org/wiki/Solanaceae) ([nightshade](http://en.wikipedia.org/wiki/Nightshade)) family. For centuries, datura has been used as a [herbal medicine](http://en.wikipedia.org/wiki/Herbal_medicine) to relieve [asthma](http://en.wikipedia.org/wiki/Asthma) symptoms and as an [analgesic](http://en.wikipedia.org/wiki/Analgesic) during surgery or bone setting. It is also a powerful [hallucinogen](http://en.wikipedia.org/wiki/Hallucinogen) and [deliriant](http://en.wikipedia.org/wiki/Deliriant), which is used spiritually for the intense [visions](http://en.wikipedia.org/wiki/Vision_%28spirituality%29) it produces. However, the [tropane alkaloids](http://en.wikipedia.org/wiki/Tropane_alkaloids) which are responsible for both the medicinal and hallucinogenic properties are fatally toxic in only slightly higher amounts than the medicinal dosage, and careless use often results in hospitalizations and deaths.

***Constituents of datura are***:

 ***Hyoscyamine*** and its isomer ***atropine***, which is formed during extraction procedure. Also it contains ***hyoscine*** (scopolamine) alkaloid, which is found in trace amounts.

 The medicinal use is mostly due to the hyocsyamine (atropine), used as mydriatic, antispasmodic, antidote to the toxicity of cholinergic compound, decrease in the secretion (upper and lower respiratory tract) before surgery. While the use of scopolamine mostly in motion sickness. The tropane alkaloids (hyocsyamine and hyoscine) have the following structures:

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 **Hyoscine (scopolamine)** **Hyoscyamine**

 These alkaloids are also present in other plants as **Hyoscyamus**  **niger** of the family Solanaceae, **Atropa** **belladona** of the same family, and others.

**Isolation and Identification of the Datura Alkaloids:**

1. ***Extraction:***

***Aim***: to isolate datura alkaloids.

***Equipments:***

* *Reflex apparatus.*
* *Conical flasks.*
* *Stirrer.*
* *Funnel.*
* *Separatory funnel.*
* *Water bath.*
* *Filter paper.*
* *Litmus paepr.*

***Reagents:***

* *90% ethanol.*
* *2% HCl.*
* *Ammonium hydroxide solution.*
* *Chloroform.*

***Procedure:***

***Method of extraction:***.

***Plant used***: Datura stramonium.

***Part used***: fruits.

Extract ***50 gm*** of the datura fruits in ***150 ml*** of *90%* ***ethanol***  under Reflex condenser for **1 hrs.**

 Filtration

Take ***20 ml*** of alc. Extract in conical flask and concentrate on the water bath to about ***2 ml*** to remove all of ethanol

Pour theconcentratedin to ***10 ml*** of ***2% HCl***

 Heat gently

 *(****5 mins.)***

Cool and filter the Acidic extract and place in a separatory funnel

 [Wash with ***5 ml*** of ***Chloroform***] two times

Take supernatant (upper layer) and made alkaline by addition of

***Ammonium hydroxide*** solution (check by litmus paper)

[Partition with ***5 ml*** of ***Chloroform***] two times

Take the lower layer, dehydrate by adding ***anhydrous sod. Sulphate*** filter (or decant) , evaporate to dryness

***2. Results:***

Product containing the mixture of the alkaloids.

The Identification of Datura Alkaloids:

***Qualitative Analysis:***

1. **The specific tests for *tropane* alkaloids:**
2. ***Vitalli Marine Bu Test:***

***Aim :*** to identify the ***tropane alkaloids*** from other alkaloids.

***Equipments and Reagents:***

* Small beaker.
* Fuming nitric acid.
* Alcoholic KOH.

***Procedure:***

Take few mls of the extract, add to it drops of fuming nitric acid and evaporate, then add ***2 ml*** of alc. KOH.

***Result:***

A ***violet*** color will be developed.

1. ***Gerhard's Test:***

***Aim:*** to identify the ***tropane alkaloids*** from other alkaloids.

***Equipments and Reagents:***

* Small beaker.
* 2% HgCl2 in 50% aqueous ethanol.

***Procedure:***

 Add ***2%*** HgCl2 in ***50%*** aqueous ethanol to ***0.0006 g*** of atropine.

***Result :*** A ***deep red*** color will be developed.

1. **General tests for *tropane* alkaloids:**

 All reagents used for tests of alkaloids could be applied on tropane alkaloids since they are true alkaloids.