

Adulteration of Herbal Drugs

Adulteration and Deterioration

Introduction

- Adulteration in general is the debasement of any substance or article -drug . adulteration whether intended or not arise from the following condition .
- Inferiority Its means any substandard drug regardless of the cause as
- If the seeds of strychnus nux -vomiac contain less than 1.15 % of the strychnine is considered as inferior .
- Powdered opium must not contain less than 10% and not more than 10.5 % of unhydrose morphine

- **Spoilage** This adulteration means any impairment in the quality or value of substance caused by fungi or bacteria with a result the substance will be not suitable for human , the food or drug consider as a type of adulteration .
- **Deterioration** It means any impairment or distraction in quality of the substance by removal or distraction of the drug constituents by the action of distillation , moisture , heat, insects and rat ex :-
 - The coffee beans from which most of caffeine removed by over roasting is consider as a type of adulteration
 - Rancid fats
 - Clove buds which contain clove oil (for a tooth ache) from which part of oil removed by distillation this considered as inferior clove .

- Admixture

it's a form of adulteration occur throw accident , ignorance or careless by mixing one substance with other .

- Sophistication This form of adulteration is caused by the addition of inferior material to anther with intake to defraud and this type mostly occur in food , spices and powder of drugs ex:

- Glucose powder is added to acacia gum powder .

- Substitution This type take place when completely different substance is given instead of the one requested ex: cotton seed oil give instead of olive oil .

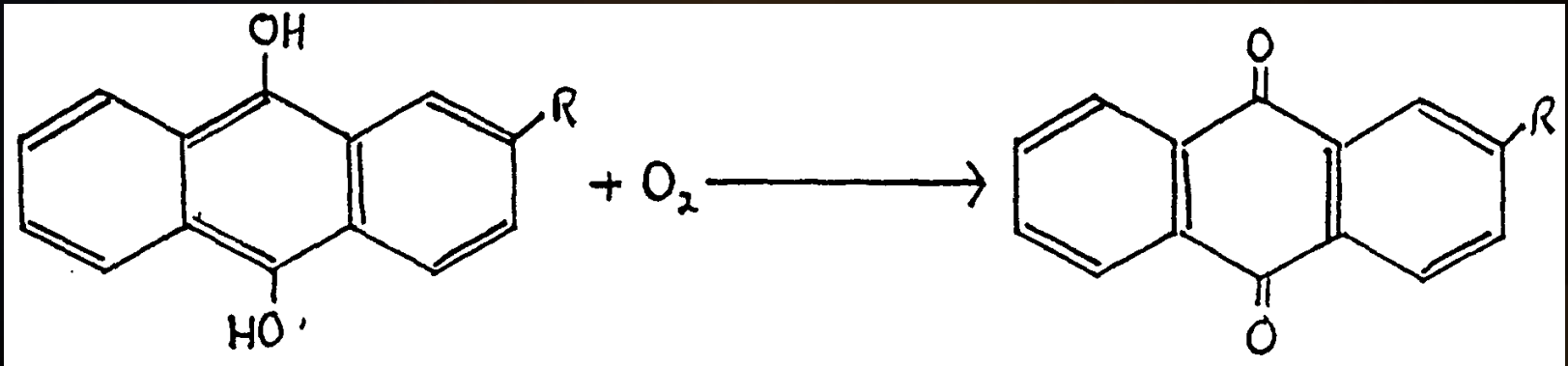
Some important factors involved in drug production

- **Collection**
 - **Drying**
 - **Storage**

Collection

- Plant are usually collected from wild or cultivated plant usually skilled persons are used to collect these plants .
- Some time ordinary workers are used belladonna and cinchona need skilled workers while roots of ipecac and liquorice are collected by ordinary workers .
- The season of collection is very important because the constituents of plant vary through out the season like Podophyllum , rhubarb contain important constituent which change in their concentration depend on season .
- Podophyllum and rhubarb are collected in summer

Rhubarb contain anthraquinone derivatives in winter but contain anthranols product which in warmer weather these anthranols will be oxidized to give anthraquinone which important as cathartic drug



- The age of plant also important because the type of constituent and their concentration also change according to age .
- Belladonna shoots contain hyoscine and hyocyamine above 80% when they are young and this percent is reduce in mature plant to about 30%
- Compher is not formed until 40 years old . the age of plant effect on the quality of constituent generally
- Leaves are collected when flowers are open
- Flowers are collected before they are fully expend
- Roots and underground parts collected when the aerial part start to die
- The bark are collected according to the season and weather

Drying

Removal of moisture and water content from plant if the enzyme activity required to continue the drug store in moderate temperature ex: cascara bark or vanilla .

But if the enzyme activity is not necessary which is mostly used for large number of drying drugs there are two types of drying :-

- **Air drying**
- **Artificial drying or heat drying**