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Topic: Quality control of crude drugs

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2023

Quality control of crude drugs

Adulteration

The term adulteration is defined as substituting original crude drug partially or whole with other similar-looking substance. The substance which is spurious or harmful and inferior in chemical and therapeutic property. It is also known as debasement of an article.

The action of making something poorer in quality by the addition of another substance is also known as adulteration.

Types of Adulteration-

(A) Intentional (deliberate adulteration)

(B) Unintentional (undeliberate adulteration)

(A) Intentional (deliberate adulteration)

a) **Adulteration using artificially manufacturer substance-** the original substances are adulterated by artificially manufactured material.

The materials are prepared in a way that is appearance resemble with original drugs.

Example:

Paraffin wax is yellow in color and substituted for bees wax.

b) Substitution using inferior commercial varities: The original drugs are substituted by inferior quality drug similar in organoleptic characters, chemical composition and pharmacology activity.

Example: Ginger are adulterated with african and Japanese ginger.

c) Substitution using exhausted drugs: The active medicaments of the main drug are extracted out than used again. This technique is frequently used for the drugs containing volatile oils such as clove, fennel etc.

Example: After extraction, saffron and red roses petals are re-colored by dye.

d) Substitution of superficial similar inferior natural substances: The substituents used may resemble morphologically but will not be having any relation to the genuine drug in their constituents or pharmacologically activity.

Example: Peach kernels and apricot kernels adulterated with almonds.

e) Adulteration of powders: Adulteration used are generally powdered waste products of a suitable color and density.

Example:

Brick Powder adulterated with barks.

(B) Unintentional (undeliberate adulteration):

- Confusion in the names of local languages and indigenous medical system
- Lack of knowledge
- Morphological similarities
- Carelessly collection
- No availability of authentic plant
- Due to not proper storage

Evaluation of crude drugs

- Evaluation of drugs means identify of its quality and purity.
- It is also includes the detection of the nature of adulteration in the crude drugs.
- The morphological character may suffice the need of detection but in case of powdered drugs the microscopic characters, while in case of liquid drug chemical tests and one of the physical standards such as specific gravity, optical rotation solubility etc. May be helpful in detection of adulteration.
- The methods are employed in detecting adulteration is genuine drugs.
- The crude drugs can be identified on the basic of their morphological, histological and chemical lstudies.
- The different techniques involved in standardization of crude drugs are as follow.

1. Physical Evaluation:- Physical standards are to be determined for drugs wherever possible. They may help in evaluation, specifically with reference to specific gravity, density, optical rotation refractive index, Ash value, Extrative value ,melting point, viscosity and solubility in different solvents.

2. Chemical Evaluation:- Chemical comprises of different chemical tests and chemical assays. The isolation, purification and identification of active constituents are chemical methods of evaluation Quantitative chemical tests such as Acid value, Saponification value etc Qualitative chemical test such as detection of alkaloids, glycoside, tannin, resin etc. Chromatographic methods like- T.LC , H.P.T.L.C etc.
It also help in proper identification of various of the crude drugs.

3. Biological Evaluation:- The estimation of potency of crude drugs is done by means of the its effect on the living organism like bacterial, fungal growth or animal tissue or entities animal, it is called as bioassay
Bioassay is the measure of sample being tested capable of producing the biological effects as that of the standard preparation.

4. Morphological Evaluation (Organoleptic):- It is refers to evaluation of drugs by colour, odor, teste, size, shape and special features like touch, texture and sound etc.

The study of form of crude drugs is morphology while description of the form is morphography.

The adulteration of seeds of strychnos nux-vomica with the seed of strychnos nux-blanda or Strychnos potatorum, caraway with Indian dill, Alexandrian Senna with dog Senna is identified by morphological techniques.

5. Microscopic Evaluation:- The microscopic evaluation also covers study of constituents by application of chemical tests to small quantities of drugs in powdered form or to histological sections of the drug (micro-chemistry).

Microscope by virtue of its property to magnify permits the minute structure under study to be enlarged and can be used to confirm the structural details of the drugs from plants origin.

In leaf Such as- palicate ratio, vain islate number. , vain termination number, stomata, trichomes , stomatal index.