

REVISITING THE CONCEPT AND APPLICATION OF THE PHENOMENON OF TADBIR (DETOXIFICATION)*

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ABSTRACT: Greco-Arab System of Medicine contains diverse factors from different cultures in terms of philosophy and *materia medica* developed technically well-organized procedures of processing for safety and eliminating toxicity from natural drugs for rational therapy. This pharmaceutically established phenomenon in its application may be referred as *Tadbir*. Commonly it may be denoted as purification, processing and detoxification.

At one hand this art of reduction of toxic components in natural drugs bear reference to the renowned Masters of Unani Medical Science like Al-Razi, Al-Majusi and Al-Zahrawi. On the other hand, the phenomenon of *Tadbir* comprising different methods of purification, processing and detoxification are indicated to have been assimilated into Greco-Arab System of Medicine as historically established Indian medical (Ayurvedic) factors commonly referred as *Sadhana* (purification) and *Marana* (killing) under the overall concept of *Rasa sastra*.

In scientific understanding of *Tadbir* procedures are employed to make raw natural drugs (mostly with temperament of 3rd/4th Order) of poisonous nature or with known toxicity free from such poisonous, side or unwanted effects. There is detectable physico-chemical change observed on the part of the raw material as a result of such procedures, and the relevant items become easily digestible, absorbable and assimilable. Added advantage of such procedures is that as an outcome relevant natural drugs become harmless for administration in prescribed dose, more potent in exhibiting pharmacological activity and may be stored for longer periods as compared to unprocessed natural materials.

In overall composition of natural raw drugs, following such processing methods, decrease in potentially toxic bioactive ingredients occurs. For example lowering of Strychnine in *Nux vomica*, Morphine in *Opium*, Phenols and Bhilawanol in *Semecarpus*, a-Glycosidic Chrysophanol in *Rhubarb* species etc.

In the light of above mentioned study, an attempt has been made in this paper to project the benefits of Greco-Arab and Indian approaches towards employing the methods of processing, purification and detoxification of natural drugs in order to derive more benefits from the otherwise potentially toxic drugs in raw (unprocessed) state. Work is underway at the Hamdard Institute of Advanced Studies & Research, Hamdard University Karachi.

KEYWORDS: *Tadbir*, Greco-Arab System of Medicine, Ayurvedic, *Rasa Sastra*, Temperament, Potentially Toxic Bioactive Ingredients.

INTRODUCTION

One of the distinguished features of *Unani* System of Medicine is that it meticulously cares for non-toxic effects of drugs on the human body. In this healing system of medicine whenever 'Natural Drugs' of known toxic principles are prescribed, like *Calotropis procera*, *Strychnos Nux-vomica*, *Papaver somniferum*, *Semecarpus*, *Rhubarb*, *Aloes*, etc., these are advised to be purified, processed and or detoxified before use or before including into a desired formulation. It is a safety approach to avert any adverse, side or toxic affect(s) of the item under consideration.

This phenomenon is termed as *Tadbir* or *Islah* and is followed to bring a change in the composition of the natural drug and as a result get rid or minimize the potentially toxic component of the natural drug, instead the method may substantiate its desired positive attribute. Such purified, processed and or detoxified items are called *Mudabbir* and in *Unani* pharmacy many natural drugs are made *Mudabbir* before including into relevant formulations or using in specific prescriptions (Kabiruddin, 1942).

JUSTIFICATION

The preliminary project has been undertaken in the best interest of *Unani* Medicine to interpret the phenomenon of *Tadbir* scientifically including methods of purification, processing and or detoxification. The method varies for different types of natural drugs from vegetable, animal and mineral kingdoms. The study is of analytical nature where quantitative reduction of active compounds shall be manipulated in the first phase supported by comparison with the standards available. It shall be followed by pre-clinical toxicity study using experimental animals for observation.

Active Compounds which are reduced quantitatively as a result of *Tadbir* (Purification, Processing and or Detoxification): Conventional Approaches in *Unani* Medicine towards minimizing bitterness, reducing toxic effects, and improve absorption have been indicated not only by the GrecoArab physicians in history of medicine, but the Ayurvedic pharmacy also propounds this methodology to be of great significance. The procedures in fact,

Examples of some Natural Drugs of *Unani* Medicine, which are subjected to *Tadbir* before use.

Botanical Name	English Name	Unani	Temperament
<i>Citrullus colocynthis</i>	Colocynthis	<i>Indrayin</i>	Warm 4 Dry 2 Order
<i>Calotropis procera</i>	Swallow-wort	<i>Aak</i>	Warm & Dry 4 Order
<i>Hyoscyamus niger</i>	Henbane	<i>Ajwain Khurasani</i>	Cold & Dry 3 Order
<i>Papaver somniferum</i>	Opium	<i>Khashakhash</i>	Cold & Dry 4 Order'
<i>Tamarindus indica</i>	Tamarind	<i>Imli</i>	Cold 1 Dry 2 Order
<i>Prunus amygdalus</i>	Almond	<i>Badam</i>	Warm & Dry 3 Order
<i>Strychnos Nux vomica</i>	Nux Vomica	<i>Kuchla</i>	Warm & Dry 3 Order
<i>Peganum harmala</i>	Syrian Rue	<i>Harmal</i>	Warm & Dry 2 Order
<i>Withania somnifera</i>	Wintercherry	<i>Asgand</i>	Warm & Dry 3 Order
<i>Datura stramonium</i>	Thorn Apple	<i>Dhaturah</i>	Cold & Dry 4 Order
<i>Brassica nigra</i>	Black/Yellow Mustard	<i>Khardal</i>	Warm & Dry 4 Order
<i>Carum carvi</i>	Black Caraway	<i>Zirah Siyah</i>	Warm & Dry 3 Order
<i>Rheun emodi</i>	Rhubarb	<i>Rewand Chini</i>	<i>Murakkabul-Quwwa</i>
<i>Colchicum luteum</i>	Colchicum	<i>Suranjan</i>	Warm & Dry 3 Order
<i>Aconitum chasmanthum</i>	Aconite	<i>Bichnag</i>	Warm & Dry 4 Order
<i>Semicarpus anacardium</i>	Marking Nut	<i>Bi/adar</i>	Warm & Dry 4 Order
Arsenicum	Arsenic	<i>Sankhiya</i>	Warm & Dry 4 Order
Arsenic Sulfate	White Oxide of Arsenic	<i>Sankhiya</i>	Warm & Dry 4 Order

enabled the physicians to undertake use and prescription of raw natural products, direct or indiscriminate use of which may prove fatal. The phenomenon also supported expansion of the *materia medica* of Greco-Arab medicine particularly by assimilating those natural substances which were of the Spanish, European, Chinese, Central Asian and Indian origin. Use of natural materials like *Calotropis* and *Strychnos*, inorganics like Arsenic and Sulfur and metallics like Silver and Gold following *Tadbir* over the centuries has proved to be effective. But the phenomenon in fact needs scientific evaluation or interpretation.

One of the approaches to find difference between the crude natural herbal materials with those which have been turned *Mudabbir* is to subject them to phytochemical evaluation. Quantitative difference between the two forms of active compounds has been found to be from 0.5% or more. Methods of purification, processing and detoxification differ from one species to another and therefore the active components also differ accordingly. Some commonly referred *Unani* drugs which essentially require to be

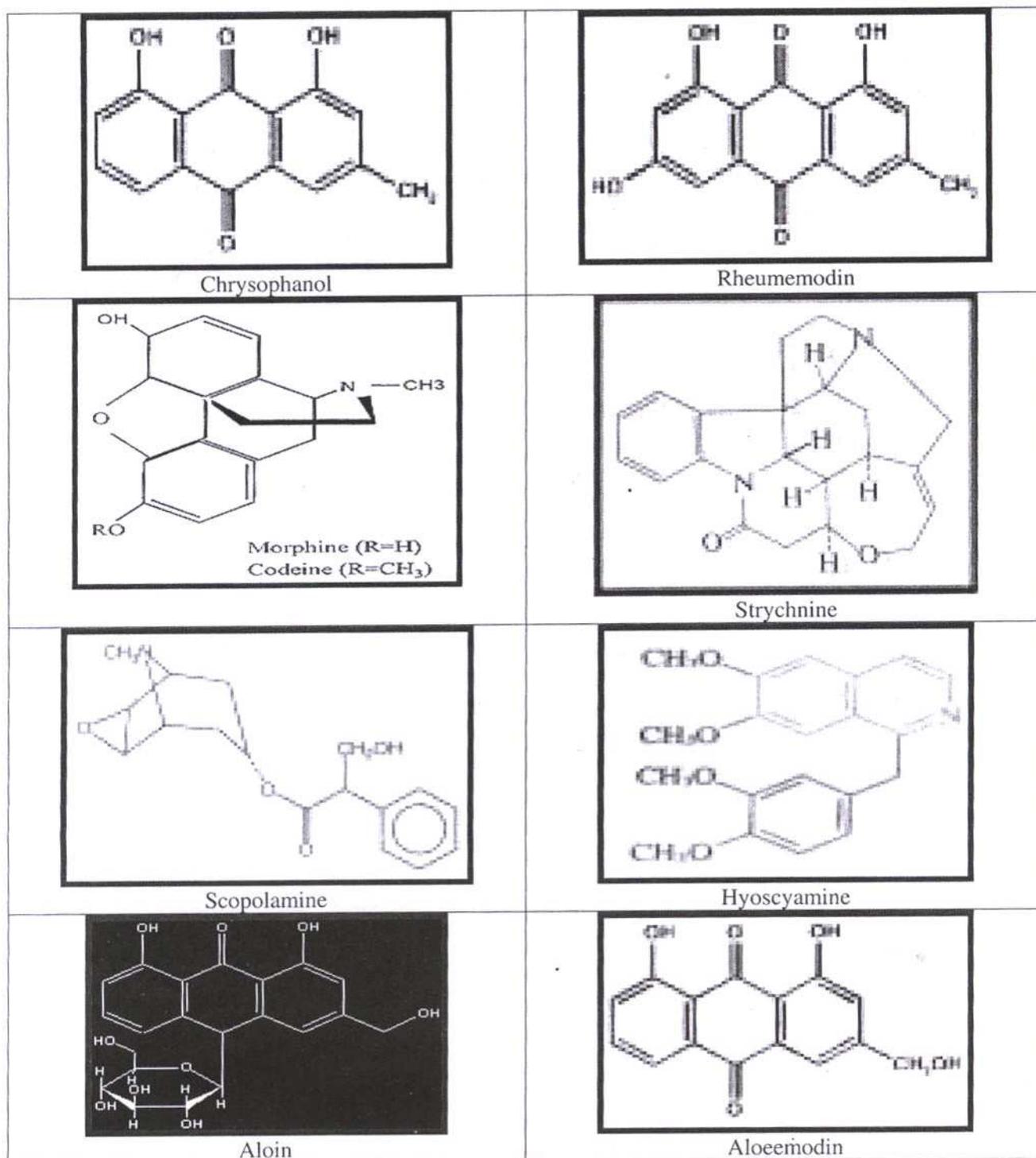
treated before use include for example *Colocynthis* (fruit), *Strychnos* (fruit), *Hyoscyamus* (fruit/seeds), *Poppy* (latex) and *Rhubarb* (rhizome/root) contain active components like those mentioned below which are reduced as a result of *Tadbir*.

MATERIALS & METHODS

A) Conventional Methods:

Some Examples: Citrullus colocynthis (Indrain/ Hanzal): Small limestone pieces are kept in two liters of water for 12 hours then this water is strained. One kilogram *Colocynthis* fruits cut into small pieces are kept in this strained lime water for about 24 hours and the water is again strained. This procedure is repeated thrice. As a result, bitterness of the fruit material is diminished. If there is left some bitterness the procedure may be repeated. The material regarded as *Indrain Mudabbir* may be used without fear of possessing any harm in recommended doses.

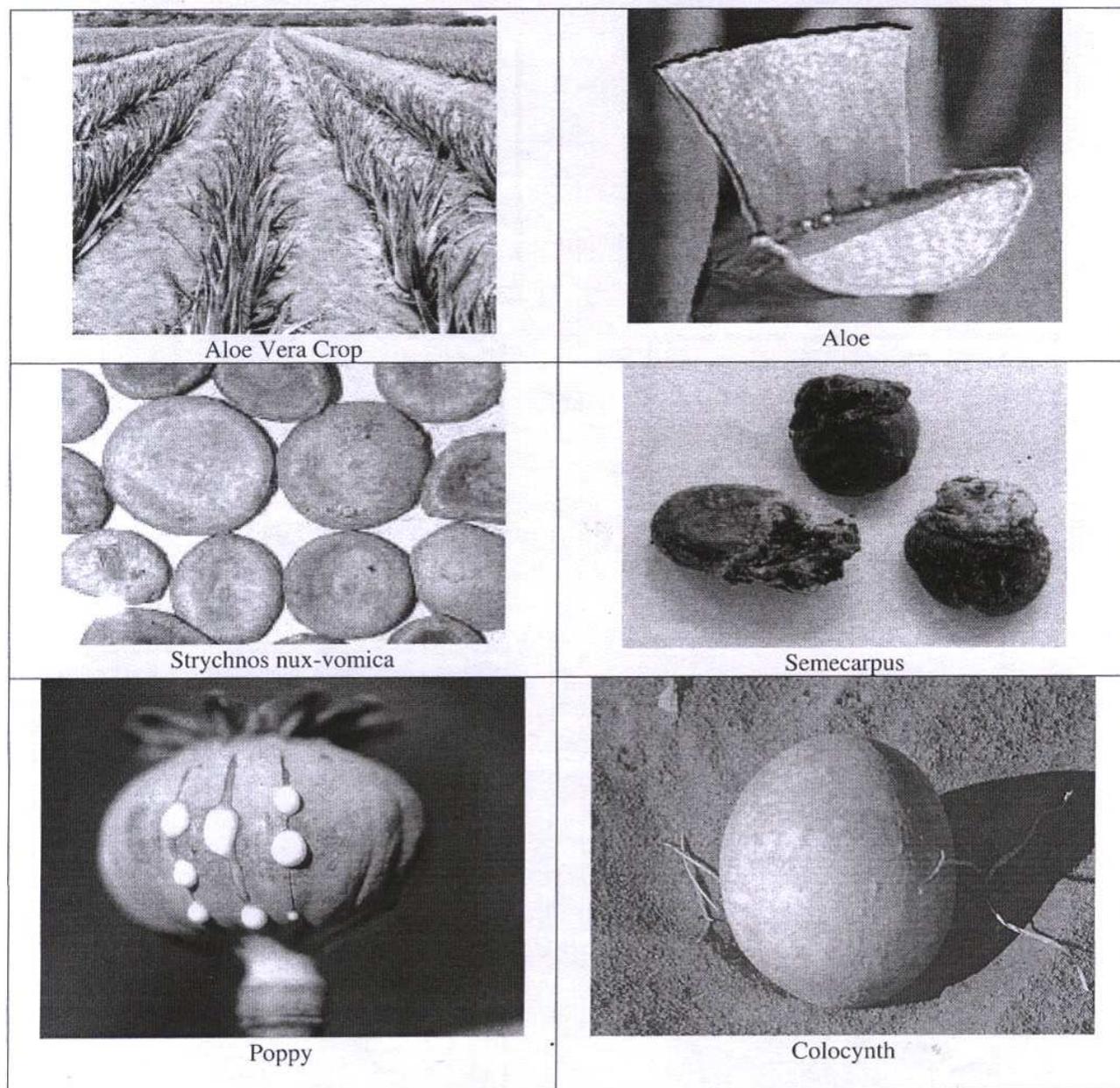
Papaver somniferum (Afiyun): The dried latex is moistened well in *Aqua Rose*, strained and the kept on heat to dry and concentrate to a limit that it can be



rolled and binded into pill-like form. The material may be regarded as *Afiyun Mudabbir*.

Aloes: Peeled Aloe kept in apple(s) or other Pyrus species like *Behi* or in *Brassica* fruit (like *Shaljam*)

tied under a cloth and covered by moist wheat flour, is kept over fire for so much time that the heat reaches the Aloe and flour becomes red hot (well-baked type). The Aloe so treated may be taken out, dried and used for specific purpose.



Semecarpus anacardium (Biladar/Bhilawan): With the help of a hot clamp the fruit is pressed so as to get rid of the mucilage (*'Asl Biladar*) safely. Take care that the mucilage and the fumes do not come in touch with the body. Fruit cover is then taken away, mixed gently in Coconut or Walnut Oil and used according to the need in prescribed doses. The material so treated may be regarded as *Bhilawan Mudabbir*.

Strychnos nux-vomica (Kuchla): *Strychnos* is kept in water for one week then change that water. Repeat this procedure for seven days. On eighth day take it out and keep in moistened wheat flour for seven days. On eighth day take it out, gently wash, get rid of the cover and boil in a kilogram of milk taking care that it should not touch the base of the utensil. When milk becomes dried, take the fruits out and wash with hot water gently, then dry them. Make powder of the fruits



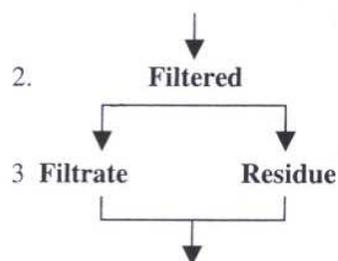
Colocynth in wild

and use according to the prescription. The material so prepared may be regarded as *Kuchla Mudabbir*.

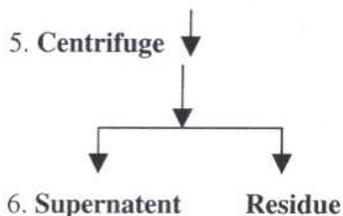
B) Experimental Approach:

Includes the Quantitative Estimation of free and combine states of active compounds, following the schemes for the determination of phenols, glycosides and tannins. The general approach is as follows:

1. **Alcoholic Extract (under vacuum)**
/ Chloroform Ext/ MeOH Ext.



4. **Combined Filtrate**



7. **Column Chromatography**

8. **Purification & Fractionation**
9. **TLC, UV Spectrophotometry**

- (Shimadzu UV 1200 UV-VIS)
10. **Preparative TLC (Slica-gel)**
HPLC Normal & Reverse Phase
11. **Quantitative Estimation (Shimadzu**
SPD- 6A) against the Standard
12. **NMR**

After Tadbir, Confirmation of Qualitative & Quantitative Difference

9. **TLC, UV Spectrophotometry**
(Shimadzu UV-1200 UV-VIS)
10. **Preparative TLC (Slica gel) HPLC**
Normal & Reverse Phase
11. **Quantitative Estimation (Shimadzu**
SPD- 6A) against the Standard
12. **NMR**

CONCLUSION

- Indigenous methodology of *Tadbir* comprising Purification, Processing and or Detoxification is result- oriented in minimizing the toxic factors present in the crude natural forms.
- Scientific evaluation employing phytochemical approach may prove useful, but this approach needs further endorsement to highlight chemical and bio-activity based difference among the crude natural and *Mudabbir* drugs.

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