

# Persian Manna in the Past and the Present: An Overview

Farid Ramezany<sup>1</sup>, Narges Kiyani<sup>1</sup>, Masoumeh Khademizadeh<sup>1\*</sup>

Traditional Pharmacy School of Traditional Medicine, Tehran University of Medical Sciences, Tehran, Iran

\*Corresponding author: khademi2k1@yahoo.com

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**Abstract** Persian Manna is the most economically important manna in Iran which is collected mainly in Iran and Transoxiana. It is exudates from stems and leaves of camel's thorn (*Alhagi persarum* Boiss. & Bush.), probably by action of an insect. It forms sweet, semisolid resinous tears on the shrubs. Persian manna has different uses in Persian traditional medicine, ethno medicine and sweetmeats. Among the various effects attributed to Persian manna, laxative and cholagogue properties are more prominent than the others. On the basis of indications and contraindication described in old writings, it is used as an immunostimulant agent. Phytochemical profile of this manna shows some controversies between studies that are discussed briefly.

**Keywords:** Persian manna, Taranjebin, *hedysarum*, Persian traditional medicine, neonatal jaundice, camel's thorn, *Alhagi persarum*

## 1. Introduction

Taranjebin (TA) or Persian manna is a kind of manna which produced on some camel's thorn shrubs. The word etymology of Taranjebin shows it is derived from the Persian word "Tar-angabin" that means wet honey. In traditional Persian and Islamic medicine it is also named with other names such as Asal al nada (Dew honey), Oshtorangebin (Camel honey) and Honey of rose [1]. In addition to Persian manna, TA called Merniabin manna, Alhagi manna, Hedysarum manna and Caspian manna in English and Manne de perse, Manne d' hedysarum and Manna d' alhagi in French [2,3]. It is the most economically important manna in Persian herbal market and exported from Iran.

TA is a semi liquid resinous sweet substance which appears on the leaves and branches of the manna producing camel's thorn. On standing TA hardens in form of white granules which gradually turns to yellow and brown colors [1,4]. Among various manna, observed in Iran, only TA has a tear like shape [5].

### 1.1. Collection

The season of harvesting begins from end of spring to autumn, depending on climate of the region. The manna exudates during night and must be collected in early morning. According to Persian old writings, TA was collected by shaking dried cut-off bushes into a large cloth followed by winnowing the leaves, thorns, etc., from it. Whatever of the manna still adheres to the stems is separated by dissolution in water, filtering out solid impurities, and finally evaporating water to its normal consistency to yield small agglutinated particles which have inferior quality [6]. Nowadays the manna is harvested by putting a tin, tub or basket under the shrub followed by striking the stems by a piece of wood. This process makes the hardened tears of the manna to drop in

to the receiver. After partially removing of impurities, it is sun dried and further purified by air to give the final product. A small amount of TA is hand-picked, especially at the beginning of the manna production period when the tears are considerably big. This product, although very pure, but has a price 2-3 times more than others [4].

Despite of these procedures, the complete isolation of impurities is not economically feasible, so the commercial manna is usually has some impurities.

## 2. Taxonomy and Ecology

The manna producing plants are *Alhagi persarum* Boiss. & Bushe and *Alhagi mannifera* Desf. [7,8] Surprisingly, these species do not yield TA everywhere they grow. This phenomenon was first noted by Biruni [9], seems to be connected with temperature and soil conditions [1]. He also reported the existence of an insect on the shrub without any more description [1]. [2]Avicenna also remarks that "this manna is produced mostly in Khorasan and in Transoxiana, and in our region it occurs most frequently on the Haj (camel's thorn)". Some 19<sup>th</sup> century authors have also remarked that "the alhagi does not yield any kind of sugary exudation in Arabia, India, Palestine and Egypt, whereas this product is rather abundant in Persia, Bukhara, Kandahar and Harat, so it is imported into India". Schlimmer also specifies that the camel's thorn shrubs yields manna only in certain areas such as Khorasan, Tabriz, Tabas, Zarand, Tegerood (near Qom), and Booshehr in Iran, and only during the hot season [10]. He also adds that, "whereas allegedly in Lebanon the *Hedysarum alhagi* yields manna only after the goats have grazed its leaves and buds as reported by Londerer, in Persia, natives of those regions where Taranjebin is harvested had told him the shepherds are bound by communal groups to keep their herds away from the plains where the manna-producing species are abundant, preventing sheep and goats to damage the

*manna harvest*". Latter, an insect from genus *larinus* proposed for Taranjebin production, [8] but the latest study shows strong relationship between Tranjebin production and a froghopper *Poophilus nebulosus* Leth. [11] Differences in botany, production methods and analytical profiles imply that mannas which produce in Lebanon and Iran may be not the same that suggest more studies.

### 3. Ethno Botanical Approach

On the basis of anthropological studies conducted on vilages in 20km south-east of Gonabad county in Khorasan province of Iran, The camel's thorn shrub are divided into male and female groups. The male shrubs grow fast with no manna but female shrubs, although grow slowly, but produce manna. The shrubs have to grow as quick as possible. Pasture of stems and buds by livestock prevent the shrubs to produce Taranjebin. The productive shrubs are located in mountain and plains contrary to near farms ones. The amount of crop is dependent to rainfall in spring and hailing increases the production of the manna in summer [4].

#### 3.1. Historical Background

The history of Taranjebin usage in Persia came back to thousands years ago. The Sasanids knew the medicinal properties of it. In the west Taranjebin of Iran was first noticed by Leonard Rovolf in bazaar of Alepo in large scale at 1573. In 1818 Vieri in a review of mannas described it as Teregiabin, a local dialect of Taranjebin. In 1877 Villiers studied Taranjebin and identified it as manna of *Alhagi maurorum*. Also Atchinson and Royle imply to this manna in their explorations [4,5].

#### 3.2. Therapeutic Effects in Persian Traditional Medicine

On the basis of old available Persian writings, Tanranjebin's nature is moderate [12], warm and wet in first degree [6,13] or warm and wet in second degree [14]. It is more detersive than sugar, demulcent of upper respiratory tract, mild cholagogue, diuretic, detersive for bladder, antispasmodic, motive for humors and makes body warmer [6,12,13,14,15]. It is a mild laxative (more suitable for infants and children and for adults usually used as a sweetener for Senna leaves and other laxatives) [1]. It is useful for health maintenance, cough, pectoral aches, hot fever, vomiting and thirsty. TA is administered for excretion of burned humors when mixed with medicinal whey and voiding acute warm humors with barley decoction. In dysuria, Taranjebin is prescribed with deer butter. Drinking of solution 37.5 g of the manna in about 450 ml of fresh cow's milk is aphrodisiac and with black cumin water useful for flatulence occurred with mild fever. On the other hand, TA is contraindicated in acute fever, measles, smallpox, dysentery, hematuria and piles. It is not suitable alone for warm tempered persons and harmful for spleen, so must be given with Tamarind (or its juice), Jujube or decoction of Barley. In order to passing more quickly through GI tract, Taranjebin administrated with Jujube and plum juice [6]. The alternatives suggested for TA are purgative manna, Barley decoction, Barley

decoction plus "red sugar"<sup>1</sup> and camel's thorn juice with sugar [6,12]. The dosage of the manna can vary from 35 to 150 g depending on patient conditions and temperaments [6,12,13].

#### 3.3. Ethno Medical Properties

Nowadays, Taranjebin mainly used as a mild laxative and treatment of neonatal jaundice in Persian ethno medicine. Although studies in mice shows lowering bilirubin effect with no toxicity in mice [15,16], a single clinical trial does not show significant decrease in blood levels of bilirubin by this manna [17]. In addition, Taranjebin used in Persian ethno medicine for fever and rubella (As a aqueous solution, in some recopies with almond oil or decoction of Indian laburnum<sup>2</sup> pulp). In preparation of the solution, 20-30g of the crude manna is dissolved in hot water followed by filtration of solid impurities, after cooling the solution is consumed [4]. Controversial indications and contraindications could be observed for fever, infectious and viral diseases such as measles in old literatures. The stimulation of immune system by TA might be an explanation. However, more precaution and pharmacological studies required for better understanding the benefits and hazards of this commonly used medicinal.

### 4. Specifications and Analysis

Taranjebin consists of white to brown small tears, soluble in water with sweet and pleasant taste. Solution 1% of it in water is dextrorotatory [18]. The TA solution slightly reduces Fehling's solution that could be strengthened by inverting in prolonged stay. There is no standard for solid impurities; however, 7-12% is considered as good quality [4]. The analytical profile of the manna is summarized in the Table 1.

**Table 1. comparison of ingredients and specifications of Tranjebin in three different studies**

Constituents	Ivanova [19]	Sina [5]	Tabasi [4]
Melezitose	47.7%	15%	
Saccharose	26.4%	42%	
Fructose			
Reducible Sugar	11.64%		
Total Ash	5.8%	3.5%	3.4%
Acid washed Ash			1.15%
Moisture	5.08%	4.57%	0.635-0.1.5%
Tannins			-
Alkaloids			-
Gums and Mucilage		12.4%	12.5%
Acidity (as Oxalic acid)		0.09%	
Acidity (as Tartaric acid)		0.15%	
Ca		+	
Fe		+	
Al		Trace	
P		+	
Cl		+	
Si		+	
Impurities	7.1%	Range 5-22% mean 15%	23-24%

<sup>1</sup> In Persian Traditional Medicine it is attributed to concentrated raw sugarcane juice.

<sup>2</sup> *Cassia fistula* L.

The analysis of this manna was controversial for many years. Although Agard, Bridel and Villiers declare that Taranjebin contain melezitose the studies of Ebert (1908) and Moghadam (1930) reported the main constituent of the manna as sucrose without the melezitose [7]. Contrary to previous authors, Ivanova, Niknejad, Sina and Tabasi showed melezitose in the manna samples.

## 5. Adulterants and Identification

Sugar or its by-products may be used as adulterants of TA tears and mixed with original product. As a suggestion, determination of amount of reducible sugars of the manna may be helpful [4].

## 6. Conclusion

Although Taranjebin is the most economically important manna in Persian herbal market with good potential for exporting, little is known about its ecology, botany and potential therapeutic uses. Ecological studies on shrub-insect interactions may lead to knowledge for more production of this manna with higher qualities. The controversy in analytical profiles of this manna indicates that further studies must be done to determine the factors that may cause variations. Existing differences in plants, production methods and analytical profiles imply that Taranjebins which produce in Lebanon and Iran may be not the same and suggest more studies to establish. In addition, there are other beneficial effects of TA in health maintenance and controversial indications in fever, infectious and viral diseases such as measles and rubella, probably by stimulation of immune system, requires more attention. Despite of primary research on TA is not in accordance with ethno medical usage of it in adult and neonatal jaundice, more precise studies are required to rule out this popularly accepted effect.

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