

Cancer perception in Unani medicine – Conceptual analysis

Unani tıpta kanser kavramı – Kavramsal analiz

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SUMMARY

Cancer has emerged as a major public health problem worldwide as well as in developing countries. With the cancer incidence further rising, it poses a huge public health and economic challenge. Although widespread research for management of cancer has been going on and present treatment causes so many adverse effects with enormous financial implication, a huge unconsummated need of better intervention is to be explored that has no or less side effects, easily available and above all cost effective in cancer treatment. Unani physicians have not only described the concept of *Sartan* which literally mean cancer but also cited its management through different regimen which remains unexplored. Linkage of cancer to erratic life style and hereditary factors had been quoted by Unani scholar's way back in 12th century itself. The recent studies in the field of herbal cancer therapy indirectly support and validate the Unani theory of humors particularly *Sauda* (black bile). Many single drugs, used in Unani system for the disease, have been evaluated for anticancer activity and found to be very effective. However, no attention has been paid to elucidate the efficacy of compound formulations which needs to be scientifically validated. It is defined as *Warm Salabat* (hard inflammation) with lesion and their tributaries filled by *Madda Saudavia* (morbid melancholic humour). The main cause of *Sartan* (cancer) is stated to be morbid *Sauda* which is formed by *Sauda-e-Ahtraqia* (combustion of sauda) after *Ahtraq* (combustion) of *Sauda*. The principles of its management include *Ilaj-bid-Dawa* (drug therapy), *Ilaj-bil-Ghiza* (dietotherapy), *Ilaj-bit-Tadbeer* (regimenal therapy) and *Ilaj-bil-Yad* (surgery). The future strategies for research in Unani medicine are to validate these therapies by undertaking *in vitro*, *in vivo* and clinical studies as adjuvant or in palliative care.

Keywords: Sartan, Unani medicine, Cancer

ÖZET

Kanser, gelişmekte olan ülkelerin yanı sıra dünya genelinde önemli bir halk sağlığı sorunu haline gelmiştir. Kanser insidansı gittikçe artarak, halk sağlığı ve ekonomi için tehdit haline gelmektedir. Kanser tedavisi için yaygın araştırmalar sürmesine ve mevcut tedavi muazzam mali etkileri ile çok olumsuz etkilere neden olmasına rağmen, daha az yan etkiye sahip, kolay erişilebilir ve her şeyden önce maliyet-etkin yeni tedavi yaklaşımlarına ihtiyaç devam etmektedir. Unani doktorlar, sadece kanser anlamına gelen Sartan kavramını tanımlamakla kalmayıp henüz açıklanamayan olan farklı yöntemlerle tedavi yollarını da gösterdiler. Kanser ve düzensiz yaşam tarzı arasındaki ilişki Unani bilim çevrelerince 12. yüzyılda ortaya kondu. Bitkisel kanser tedavisi alanında yapılan son çalışmalar, Unani safralar teorisini dolaylı olarak desteklemekte ve doğrulamaktadır (özellikle de Sauda (kara safra)). Unani sisteminde kanser tedavisinde kullanılan tekli ilaçların birçoğu antikanser etkinliği açısından değerlendirildi ve çok etkili olduğu bulundu. Bununla birlikte, bileşik halinde kullanılan çeşitli formülasyonların etkinliğini bilimsel olarak ortaya koymaya yönelik herhangi bir çaba harcanmamıştır. *Warm Salabat* (sert inflamasyon) terimi *Madda Saudavia* (hastalıklı melankolik safra) ile dolmuş lezyonları ve ilişkili dolaşımı tanımlamak için kullanılmaktadır. Sartan'ın (kanser) temel nedeni olarak; Sauda'nın harcanması/tüketimi/kullanımı (*Ahtraq*) sonrasında oluşan hastalıklı Sauda gösterilmektedir. Tedavisinde *Ilaj-bid-Dawa* (ilaç tedavisi), *Ilaj-bil-Ghiza* (diyet tedavisi), *Ilaj-bit-Tadbeer* (perhiz tedavisi) ve *Ilaj-bil-Yad* (cerrahi tedavi) önerilmektedir. Unani tıbbıyla ilgili planlanacak araştırmalarda; bu tedavi yöntemlerinin destekleyici veya geçici tedavi olarak *in vitro*, *in vivo* ve klinik çalışmalarla doğruluğunun ortaya konması amaçlanmalıdır.

Anahtar kelimeler: Sartan, Yunan Tıbbı, kanser

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INTRODUCTION

Cancer has emerged as a major public health problem worldwide as well as in developing countries. [1] It is defined as, malignant growth characterized by the uninhibited proliferation of cells, often affecting healthy tissues locally or throughout the body. [2] The most significant risk factor for cancer overall is age; two-thirds of all cases were in those older than age 65 years. [3] Owing to its high incidence in nature, it is the second leading cause of death after cardiovascular etiology.

On the basis of different tissue involved and site it can be classified into (i) histological type which are grouped into six major categories, viz: (a) carcinoma, (b) sarcoma, (c) myeloma, (d) leukemia, (e) lymphoma and (f) mixed types and (ii) primary type. [4] Nearly all cancers arise from a single cell [1] possess unique characteristics, in that their proliferation is unregulated and they have the capacity to invade surrounding tissues and spread to other sites. The cell cycle is regulated by two families of molecules known as cyclins and cyclin-dependant kinases (CDKs). Cyclins bind to CDKs, which regulate target proteins required for entry into the next phase of the cell cycle. Actively replicating cells are targeted in cancer therapy, as the DNA during cell division is susceptible to damage or radiation. The majorities of cancers do not have a single cause but rather are the result of a complex interaction between genetic factors and exposure to environmental carcinogens. [5]

The goal of cancer treatment is first to eradicate the cancer. If it cannot be accomplished, then it switched to palliation, the reduction of symptoms, and safeguarding of quality of life while trying to extend life. Cancer therapy are classified into four main types: surgery, radiation therapy (including photodynamic therapy), chemotherapy (including hormonal therapy and molecularly targeted therapy), and biologic therapy (including immunotherapy and gene therapy). [3] Surgery has a pivotal role in the management of cancer which includes Biopsy, Excision, and Palliation in which it is necessary. [5]

Although widespread research for management of cancer has been going on and present treatment causes so many adverse effects with enormous financial implications, therefore a huge unconsummated need of better intervention that has no or less side effects. Unani physicians have not only described the concept of *Sartan* but also cited its management through different regimen which remains unexplored. Many novel compound formulations are prescribed in the classical texts which are to be scientifically validated to testify the claims made.

UNANI PERCEPTION

Sartan is an Arabic word which literally means crab and was derived from an ancient Greek word *καρκίνος* (*karkinos*, “crab”); Galen (131-200 A.D.) stated, “As a crab is equipped with talons on either sides of the body, so is the disease. The tributaries extend from the growth giving it a shape much like that of a crab. “ Paul of Aegin (625-690 A.D.), representing Arab medicine, believed that cancer is so called because it adheres with such obstinacy to the part it seizes and like a crab it cannot be separated from it easily. [6-11] In Unani terminology, it is defined as *Warme Salabat* (hard inflammation) with lesion and their tributaries filled by *Madda Saudavia* (morbid melancholic humour). [8] Usually it is developed in those who are obese and flabby in built, which is the cause for high incidence of cancer in females particularly in those hollow organs where the causative matter *Madda Saudavia* easily accumulate viz: breast, lungs, cervix, oral cavity, uterus etc. [8, 9, 11]

The main cause of *Sartan* is stated to be morbid *Sauda* [7-12] which is formed by *Sauda-e-Ahtraqia* (combustion of *sauda*) after *Ahtraq* (combustion) of *Sauda*. [8] *Dam-e-Saudavi* due to combustion of blood, makes the colour of blood black, on palpation of swelling it is not felt hot, although quantity is more as compared to *Imtila Dam* (hyperemia) just because of *Sauda*. [12] Those diseases which are due to *Khilt Sauda* (black bile) can be explained on the basis of *Kaifiyat* (quality) and *Kamiyat* (quantity) of it. If one or both of them are simultaneously disturbed, it produces morbid *Sauda* and results in alarming diseases.

HEALTH AND HUMOUR

Akhlaat (Humours) is one of the seven basic physiological components on which human body exists. Health is dependent on normal concentration and temperament of four humours (*Dam*, *Balgham*, *Safra* and *Sauda*). These humours are produced in the liver. All organs get their nourishment from different humours chiefly blood, which further depends on normal quality (*Kaifiyat*) and *Kamiyat* (quantity) of it. These two important characteristics of blood entirely depends on effective digestive system of body along with balanced diet, time of food, quality and quantity of food. (Fig. 1)

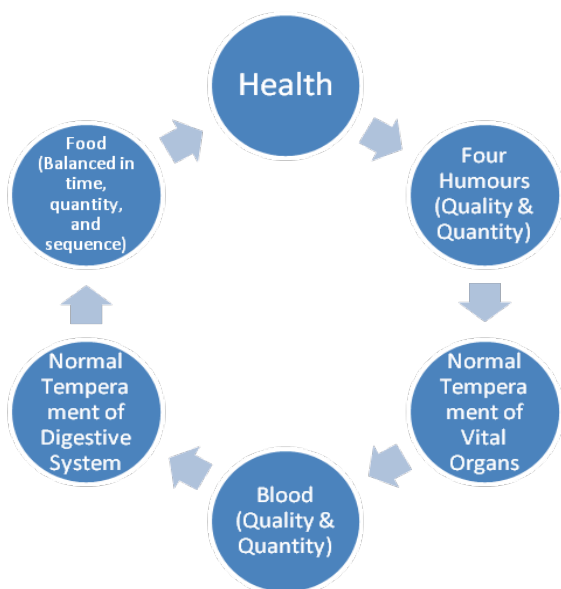


Fig 1. Health and Humour

The fundamental theory of *Akhlat* (humors) which was postulated by *Buqrath* (Hippocrates) is essential to understand the concept of *Sauda*. It is one of the seven basic components of the human body. *Akhlat* (humours) which are four in numbers namely *Dam*, *Balgham*, *Safra*, and *Sauda* are those wet and liquid parts of the body which are produced after normal metabolism. Their right proportion in terms of quality and quantity (homeostasis) is vital in maintaining health and any derangement results in disease. Their main function is nutrition, growth, repair, and production of energy for the preservation of individual's health. Each humour has its own temperament. *Sauda* is the least inferior amongst all *Akhlat* due to its contrasting temperament i.e. *Barid Yabis* (cold and dry) to *Dam* which is *Har Ratab* (hot and moist). [13, 14] *Sauda* is of two types: (a) *Sauda Rasubi* (b) *Sauda Ahtiraqi*. *Sauda Rasubi* (sedimentation) is derived from the sediment part of *Dam* during its normal formation. It is also known as normal *Sauda* as it produces from typical *Dam*. On the other hand *Sauda Ahtiraqi* or *Mirrah Sauda* (combustion of *sauda*) is formed as an end product of *Akhlate Arba* (all four humours) after their combustion. *Sauda Ahtiraqi* is an extremely harmful and more prone to malignancy with *Akkal* (corrosive) properties which putrefies the tissue and develops into obstinate ulcer.[13] Types of abnormal *Sauda* are categorized according to combustion of different *Akhlat*. (a) *Sauda Damwi* (b) *Sauda Safrawi* (c) *Sauda Balghami* and (d) *Sauda Saudawi*. [14]

Factors which alter *Sauda* into morbid one are mainly categorized as internal and external. Internal

factors include taking predominantly *Sard Khushk* (cold and dry) temperament diet and dominance of *Sard Khushk* or *Har Khushk* (hot and dry) temperaments deteriorate the digestive system. Environment and strenuous occupation also destabilizes the temperament of *Sauda*. Hereditary factors also play an important role and produce such diseases. Spleen is unable to expel it from the body which leads to spread it in whole body. Treatments of such diseases are difficult, as morbid *Sauda* is harmful for body and very difficult to detoxify. Morbid *Sauda* produced by alteration in its *Kaifiyat* (quality) can be of two types: produced by combustion of *Sauda* and produced by combustion of morbid *Safra*. On the basis of presence/absence of lesion in *Sartan*, it can be classified into two types: Cancer with lesion (due to combustion of morbid *Sauda*) and Cancer without lesion (due to combustion of *Sauda*). [9]

Most commonly *Sartan* is occurred in *A'azay Ratba* (moist organs) viz; breast, uterus, palate, intestine, face or stomach.[7, 15] The causes for deposition of morbid matter in the moist organs are due to impaired digestive process and hallow space of the organ. [12] Females are more vulnerable than male to allow viscous morbid *Sauda* due to their flabby bodies. [8, 15] Zakariya Razi maintains that *Sartan* mainly affects uterus, breast, eyes, neck and nervous tissue. [12]

Sartan is a hard *warm* (inflammation) with its root deep inside the tissue with tenderness and dryness. Intensity of pain increases due to mass effect, initially it is of pea size but it may be grow up to the size of watermelon. If it starts with unbearable pain then it is untreatable, but without pain, growth process may recede with the treatment. [11, 16] Color of mutant tissue is reddish easily differentiated from surrounding tissue; nature of pain is sharp and burning. Patients usually develop non-healing lesion with infection and putrefaction. Sometime colour of *Warm* is black; on palpation it is not felt warm as in case of acute *Warm*. Tributaries rising from cancer lesion are filled with morbid *Sauda* which looks greenish black in colour. Usually *Sartan* is developed in upper part of body, foul smelling fluid which secreted from infected lesion makes surrounding tissue necrosed towards deep inside and make the lesion indurated.[12]

THE PATHO-PHYSIOLOGY OF SARTAN IN UNANI MEDICINE

Unani philosophers believed that all the three creatures, i.e., plants, animals and minerals are the blend of *Arkan* (basic elements).

On *Ihtiraq* (combustion), the *Ajza' Latif* (rarefied portion) i.e. *Ajza' Nariyya*, *Ajza' Hawa'iyya* and *Ajza' Ma'iyya* present in them are dispersed and the *Ajza' Kathif* (dense portion) i.e. *Ajza' Arḍiyya* remains as ash. [9, 11, 14]

The philosophers also believed that plants are composed of *Arkan* as building blocks, likewise foods are composed of plants, *Arkan* are composed of foods, simple organs are composed of *Akhlat*, compound organs are composed of simple organs and likewise the body is composed of compound organs. In short, the organs are produced from *Akhlat*, *Akhlat* derived from foods, foods are forms of plants and plants are created from *Arkan Arba* as primary substrates. Thus, these are different approaches from top-down and bottom-up strategies of material causes. [14]

In humans, the food ingested undergoes four stages of digestion, which is described as the process of converting food into chemical substances that can be easily absorbed in the blood and utilized by the body tissue. [9]

In *Hazm Medi* (gastric digestion), the food is broken down into an absorbable chylus in the form of milky white emulsification. It is further absorbed into the liver through mesenteric vessels for *Hazm Kabdi* (hepatic digestion), where chyle is metabolized and converted into chymus. Here all the four *Akhlat* are produced during chymification process. *Akhlat* are synthesized from different types of diet depending on their consistency and *Mizaj*. Apart from the nature of diet, the way of hepatic processing also determines the *Khilt* production. *Khilt Balgham* is the first *Khilt* to be generated on obtaining relatively less degree of heat of liver. Next is *Khilt Dam* with moderate heat of liver. While, *Khilt Safra* follows with pretty intense heat of liver. And finally *Khilt Sauda* is produced with extreme heat of the liver. [9, 14] In *Hazm Urooqi* (vascular digestion), the *Akhlat* are converted into chemical substance (energy). They circulate in the vessels getting closer to the tissue state ready for assimilation in different organs, for wearing and growth, and replenishing the loss which is known as *Hazm Uzwi* (tissue digestion).

In the context of *Khilt Sauda*, its normal production needs a relatively higher degree of *Hararat* (heat) of liver within physiological limits and hence is very hot at the time of production. But once after its genesis, it turns most *Barid Yabis* in quality, *Kathif* and *Ghaleez* in consistency, black in colour. Which is further stored in the spleen. The position of *Sauda* amongst *Akhlat* is inferior. However, it does not mean that it has no merits. It serves so many physiological functions in the body. It renders nourishment to bones and hair, protects skin

from U-V radiations, increases the viscosity of blood etc.

However, production of *Khilt Sauda* in excess quantity or extreme quality in the form of '*Mirrah Sauda*', both are responsible for change in *Mizaj* and thereby functions of the organs that are being nourished. In contrast, the *Sue Mizaj Haar* of organs deranges the quality of *Akhlat* that reaches for replenishment by the process of *Ihtiraq* converting it into abnormal *Sauda*. The altered *Sauda* can be of the following kinds *Sauda Balghami* produced by *Ihtiraq Balgham*, *Sauda Damwi* as the result of *Ihtiraq Dam*, *Sauda Safrawi* as a consequence of *Ihtiraq Safra* and *Sauda Saudawi* as the outcome of *Ihtiraq* in *Sauda* itself. Both quality and quantity of altered *Sauda* are responsible for somatic, vegetative and mental attributes. These altered *Sauda* being extremely hot in quality and *Akkal* (irritative) in nature causes *Ihtiraq* in organs. Due to *Ihtiraq* in them, the quantity-quality ratio of *Arkan* changes and so their *Mizaj* alters. In consequence, their *Surat Naw'ia* and functions are altered. Thus the altered *Sauda* erodes the tissues and produce malignant changes altering their *Surat Naw'ia* (structure) termed as *Sartan*. [9, 11, 13, 14, 17]

PRINCIPLES OF MANAGEMENT

The principles of management in Unani medicine include *Ilaj-bil-Ghiza* (dietotherapy), *Ilaj-bid-Dawa* (drug therapy), *Ilaj-bit-Tadbeer* (regimenal therapy) and *Ilaj-bil-Yad* (surgery). It depends on the cause of disease for selecting the mode of treatment or multiple regimens. As per classical text there are four aims of treating the cancer viz: (a) complete resolution of growth including root (b) arrest the spread of cancer (c) prevent from ulceration (d) if ulcerated, treat accordingly. Before planning the management of cancer it is important to know whether it is acute or chronic, if it is chronic then it is very difficult to treat. But initially growth may be managed by *Tanqia Mawad* (evacuation of morbid humour) and food having cold and moist temperament like *Kashkab* (fermented barley) with *Roghan Badam* (almond oil), fish, half fried egg, *Moong* (red lentils), *Palak* (spinach), and *Kaddu* (pumpkin). [11, 18] *Jalinoos* (Galen) and *Ibn Sina* (Avicenna) stated that, do not treat cancer which are developed inside the body and unable to observe by naked eyes. If removal of morbid *Akhlat* had been done in such a way like *Fasd* (venesection) and steady purgation, with balanced diet having the property to produced normal blood then it can be treated safely. [12] Combustion of all *Akhlat* due to vitiation occurs in liver due to

alteration in its temperament, eating of *Sauda* producing food and excessive heat. Spleen is unable to absorb this morbid *Sauda* which makes blood more viscous and when it gets *Mukaddar* (turbid) and gets lodged in any organ it causes development of cancer. It can be treated by food of cold temperament, suitable drugs and local application (ointment) which prevent liver to further produce morbid *Akhlat* [12, 18].

ILAJ-BIL-GHIZA (DIETOTHERAPY)

Diet play a vital role in treatment as it provides the fuel for the body. If the cause is minor then it can be treated only by advising the balanced diet and no drug is required, which is termed as *Ilaj-bil-Ghiza*. *Sauda* producing food is harmful in patients of cancer, hence to be avoided. The diet must be of those kinds which is *Jaiyyadul Kaimoos* (easily digestible) and *Latif* (light diet) and do not produces *Sauda*. [11] Before planning the management of cancer it is important to know whether it is acute or chronic in the body, if chronic it is very difficult to treat, but can be managed initially by treating with *Tanqia Mawaad* and food having cold and moist temperament like *Kaddu* (*Cucurbita maxima*) which possess anti cancerous activity[18] *Maus-Shaeer* (water of *Hordeum vulgare*), *Zardi BaizaeMurgh* (egg yolk), *Samake Zarazi* (fish),[11]*Cholai* (*Amaranthuspolygamus*), *Khurfa* (*Portulaccaoleracea*), *Nabeez* (Arisht), *Bathua* (*Chenopodium album*), *Maul Jubn* (Cow's churn milk), *Kheera* (*Cucumissativus*), and goat meat soup.[7, 19, 20] Food items contraindicated in cancer are *Masoor dal* (red lentils), *Karam Kalla* (cabbage), cow beef, wild animal beef, dry fruits and concentrated liquor etc [7, 20].

ILAJ-BID-DAWA (DRUG THERAPY)

Cancer can only be treated in its initial stage but the diagnosis is very difficult. For this Unani physicians advocated not only restriction of diet but also effective formulations as discussed below.

High potency *Mohallil* (resolvent) drugs are contraindicated in treatment as it may resolve the liquid part of *Khilt*(humour) and viscous part gets thicker which ultimately causes the disease. Instead of it, use such *Mohallilat* (resolvents) as an ointment which resolve insidiously like *Tootiya Maghsool* (copper sulphate) and *Roghan Gul* (rose oil). *Zaroor* (used as powder on ulceration) formulation contains *Nishasta* (starch), *Kundur* (Gum-resin of *Boswellia serrata* Roxb.), *Safeda Kashgari* (zinc oxide) each 3.5 grams pulverized and sprinkled on ulcer or mixed with *RoghanGul* (rose oil) and used as an ointment.

Another combination to be used as an ointment is ash of river crab, *Aqlimiya* (Silver oxide) in same ratio mixed with *Roghan-e-Mom* (bee wax)[18].

MUNZIY -E- SAUDA (CONCOCTIVE FORMULATION)

Aslussoos (*Glycyrrhizaglabra*), *Gaozaban* (*Borage officinalis*), *Gul-e-Gaozaban* (flower of *Borage officinalis*) 5 grams each, *Badyan*(*Foeniculumvulgare*), *Beekh-e-Badyan* (root of *Foeniculumvulgare*), *Beekhe Kasni* (root of *Cichoriumintybus*), *Tukhme Kasni* (seeds of *Cichoriumintybus*), all are partially grounded, *GuleSurkh* (*Rosa damascena*), *Ustukhuddus* (*Lavandula stoechas*), *Shahtara* (*Fumaria officinalis*), *Tukhme Khitmi* (*Althaea officinalis*) each 7 grams, *Aloo Bukhara* (*Prunusdomestica*) 5 no. medium size, *MaweezMunaqqa* (*Vitis vinnifera*) 9 no. medium size. All drugs to be soaked in 300 ml of water at night, boiled in morning, filtered and mix 40 grams of *Gulqand* (sweet preserve of rose petals) then drink it after filtration [21].

MUS'HIL-E-SAUDA (PURGATIVE FORMULATION)

After giving above formulation for 20-30 days add this formulation: *Imli* (*Tamarindus indica*fruit), *Aloo Bukhara* (*Prunus domestica*fruit) each 20 grams, *Aftimoon* (*Cuscuta reflexa* whole plant), *Sanae Makki* (*Cassia angustifolia*leaves) each 15 grams, *Banafsha* (*Viola odorata* flower), *Shahtara* (*Fumariaofficinalis* leaves and flower) each 13 grams, *Sheer Khasht* (*Tamarixindica* secretion), *Khameera Banafsha* (Unani compound formulation) each 55 grams. First *Sana Makki*, *Banafsha* and *Shahtara* boiled then mix remaining drugs, after filtering give it to the patient. [21]

The recent studies in the field of herbal cancer therapy indirectly support and validate the Unani theory of humors particularly *Sauda* (black bile). Many single drugs, used in Unani system for the disease, have been evaluated for anticancer activity [22-32] and found to be very effective. However, no attention has been paid to elucidate the efficacy of compound formulations.

EFFECTIVE COMPOUND UNANI FORMULATIONS FOR EVACUATION OF MORBID SAUDA:

a. *Kharbaq Siyah* (*Picrorhiza kurroa*root) 375 mg, *Habbul Neel* (*Ipomoea nil* seeds) 256 mg, *Shahtara* (*Fumaria officinalis* leaves and flower) 375

mg, *HabbulGhar* (*Juniperu scommunis* fruit) 375 mg, *Shahme Hanzal* (*Citrulluscolocynthis* fruit pulp) 512 mg, *Afsanteen* (whole plant of *Artemisia absinthium*) 1024 mg, *Ghariqoon* (*Polyporous officinalis* fungus) 1024 mg, *Ayarij Faiqra* (Unani compound formulation) 1.75 gm, *Milhe Nafti* (black salt) 630 mg and *Saqmooniya* (resin of *Convolvulus scammonia*) 630 mg, powder all drugs and sieve it through silk cloth and make tablet of pepper size using cabbage water as a binder. Dose: 12 gm once in a week. [7]

b. *Halela Siyah* (*Terminalia chebula* fruit), *Aftimoon* (*Cuscuta reflexa* plant), *Bisfaij* (*Polypodium vulgare* roots), *Ustokhuddus* (*Lavandula stoechas* flower and leaves), *Milhe-Nafti* (Black salt), *KharbaqSiyah* (*Picrorhizakurroa* root) and *Ghariqoon* (*Polyporousofficinalis*). [13] All ingredients of the formulation, viz. *Halela Siyah*, [22, 23] *Aftimoon*, [24, 25] *Ustokhuddus*, [26] *KharbaqSiyah*, [27-29] *Milhe-Nafti* [30-31] and *Ghariqoon* [32] except *Bisfaij* have been reported to have significant anticancer and cytotoxic effects by various in-vivo and in-vitro studies.

In Unani system, *Bisfaij* is also considered to be a potent drug for evacuation of *Mirrah Sauda* like other ingredients of this formulation. It has also been reported for various pharmacological activities, viz. antioxidant and antimicrobial, [33] antiepileptic, antipyretic, analgesic and hypotensive activities. [34] However, no anticancer activity is reported till date. The promising therapeutic values of these drugs and their pharmacological activity imply that the formulation may be a new source of anticancer medicine.

c. Use of *Aftimoon* (*Cuscuta reflexa*) with *Maul jubn* (cow's churned milk) is thought to be most efficacious in this context. [7, 35]

FORMULATION FOR ULCERATED LESION (LOCALLY)

Haldi (*Curcuma longa*), *Asfidaj* (lead carbonate), *Kundur* (*Boswelliaserrata* Roxb.), *Elva* (*Aloe barbadensis*), and *Gile-Armani* (Arminium bole) powdered in equal ratio and make ointment mixing in *Roghane-Gul* and apply on lesion. [12]

(1) *Haldi* (*Curcuma longa*), *Asfidaj* (lead carbonate), *Rasas* (lead), and *Gile-Armani* (Arminium bole) take all medicine in equal quantity then powdered it and makes paste by mixing in *Roghan-e-Gul* (rose oil) and *Aabe-Mako* (boiled water of *Solanumnigrum*) for application. [12]

(2) Effective formulation in ulcerated cancer. *SharabeQabiz* (astringent liquor), *Sumaq* (*Rhuscoriaria*), and *Salikha* (*Cinnamomum cassia*) each in equal amount. Dip all the drugs for four days in liquor and boil it until it had a consistency like honey, keep it in glass vessels until it gets more viscous and again add some liquor then apply on the wound. If growth is pulsatile, add milk and used locally as it had a remarkable properties to treat these kinds of growth. [12]

FORMULATION FOR NON ULCERATED WOUND (LOCALLY)

(1) Powder of *Toodri* (*Lepidiumiberis*), water and honey as ointment.

(2) Ash of crab found in river mixed with honey and apply.

(3) Ash of *KaramKalla* (cabbage) dried plant's root with the help of oil as ointment. [12]

ILAJ-BIT-TADBEER (REGIMENAL THERAPY)

The basic concept of Unani principle regarding the treatment of *Sue-Mizaj* (altered temperament) depends upon cause viz; alteration of *Mizaj* alone or with morbid *Madda* (humour). If no *Madda* (morbid matter) is involved, it may be managed with reverting of the *Mizaj* using simple measures. But if morbid *Khilt* is involved, it would require evacuation. For this purpose regimenal therapy is one of the most suitable methods along with drugs. Regimens not only eliminate the morbid akhlat but also check its spread to near vital organs and maintain health by recuperation of humours. [36]

Regimens used in the management of cancer are discussed below.

1. *Fasd* (Venesection); *Rag-e-Akhal* (Median Cubital Vein) [11, 20]

2. *Is'hal* (Purgation); decoction of *Aftimoon* (*Cuscuta reflexa*) (18 gm) with *Maul Jubn* for few days or *Maul Asl*. Decoction of *Aftimoon* (*Cuscuta reflexa*) with *Sikanjabin* (compound formulation), those who are strong in built and temperament can be used *Ayarij Kharbaq*. [18]

3. *Nutool* (Douching) [12]

4. *Hamam* (Steam bath) [12]

5. *Tila* (application of lintment) and *Zimadlagana* (external application of ointment) [12]

ILAJ-BIL-YAD (SURGERY)

Those small cancers which are away from the vital organs can be excised surgically, but after Tanqia of morbid akhlat from the body. [11, 18] Cancer situated

deep inside the tissue cannot be surgically removed as surgeon is unable to cut its root resulting in severe complications, hence only analgesic drugs are advised. [12]

PROCEDURE

Cut the whole growth with margins up to healthy tissue and leaves it for few minutes for fresh blood to ooze. Treat the wound with ointments and sometimes cauterization is applied to arrest the spread but it may be prone to gets gangrenous especially those cancers which are close to vital organs.[12, 18]

Ibn Sina quoted a case report of breast cancer in which one of the surgeons removed the whole breast when diagnosed a cancer in female breast. After few days cancer had developed in the other breast. It proves that the concept of metastasis was prevalent in those periods.[11]

COMPLICATIONS

Cancer may be treated in its early stages but when it is of recent origin. Surgical removal of growth is dangerous and poses many complications described below.

1. Severe hemorrhage especially when so many tributaries are deeply engrossed thus restricts the role of surgical removal of tumors.
2. Severe pain because of continuous oozing fluid from ulcerated wound is an impediment for surgical management due to dearth and adverse effects of sedatives.
3. There is no assurance of successful treatment as *Avicenna* observed in his practice that removal of one breast led to recurrence of other, thus the concept of metastasis was laid by him. [12]

FUTURE STRATEGIES FOR RESEARCH IN UNANI MEDICINE

Anticancer studies of Unani drugs may be carried out *in vitro* as well as *in vivo* models. Different cancer cell lines such as HeLa (Cervix adenocarcinoma), MCF-7 (Breast adenocarcinoma), HT-29 (Colon adenocarcinoma), A549 (Lung carcinoma), HEP-G2 (Hepatocellular carcinoma), K-562 (Chronic myeloid leukaemia), PC3 (Prostate adenocarcinoma) and A375 (Malignant melanoma) have been widely used for research purposes. The usage of cancer cell lines enables an increment of the facts about the deregulated genes and signaling pathways in this disease.[37] Swiss albino mice are commonly used as *in vivo* model for anticancer preclinical studies.

Carcinoma is induced in mice by implantation of commonly used two cancer cells such as Ehrlich ascites carcinoma and Dalton's lymphoma ascites cells. [38] Various concentration of extract of Unani drugs may be studied on the above cell lines.

Adjuvant or adjunct therapy is given in addition to the primary treatment to enhance its efficacy or it alters the effect of another agent. The surgeries and multifarious treatment regimens used in its management have led the word to be used mostly to define adjuvant cancer care. Traditional medicines can play a vital role in such studies. But the constraint is that unless *in vitro* and *in vivo* studies reveal promising results it cannot be administered without undergoing above studies.

CONCLUSION

Although widespread research for management of cancer has been going on and present treatment causes so many adverse effects with enormous financial implications, therefore a huge unconsummated need of better intervention is to be explored that has no or less side effects, easily available and above all cost effective in cancer treatment. Unani physicians have not only described the concept of *Sartan* but also cited its management through different regimens which remains unexplored. Linkage of cancer to erratic life style and hereditary factors had been quoted by Unani scholar's way back in 12th century itself. Many single drugs used in Unani system for the disease, have been evaluated for anticancer activity and found to be very effective. However, no attention has been paid to elucidate the efficacy of compound formulations. The promising therapeutic values of these drugs and their pharmacological activity imply that the formulation may be a new source of anticancer medicine.

Many novel compound formulations are prescribed in the classical text for which *in vitro*, *in vivo* and adjuvant studies are to be taken on war-footing basis to scientifically validate and testify the claims made by the ancient Unani physicians to alleviate the suffering humanity.

CONFLICT OF INTEREST

None

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