

Review article:**Explanation and elucidation of cancer in reference to Greco-Arabic literature**Wasim Ahmad*, Mohd. Zulkifle, Hamiduddin¹, Sadaf Afreen, Obaidur Rahman**Abstract:**

Muslim scholars made tremendous contribution in various fields of science and their benefaction of work exhibits in all branches of medicine. Cancer is discussed by then Muslim scholars like Ibn Sina, Razi, Ismail Jurjani, Hunain b. Ishaque, Rabban Tabri, Ahmad b. Mohammad Tabri, Ibn ul Quff, Ibn Zuhr etc. In their descriptions cancer means *Sartan* (crab) as it reflects the true character of disease, since it sticks to the part stubbornly like a *Sartan*. Galen states that *Sartan* is the result of an excess of black bile. It may be due to an excessive hotness and dryness of liver by which consumed foods transform into irritant morbid matter. Concurrently, the spleen becomes weak and is unable to absorb the *Sawda* (black bile). Muslim scholars classified and distinguished clearly among the varieties of cancer in relation to specific organs such as eye, stomach, bladder, penis, uterus, mouth, and nerve tumours. The need of the hour is to evaluate and analyse the disease along with its pathophysiology, predisposing factors, differential diagnosis, and varieties of therapeutic paradigms that include nutrition, drugs, *Ishal* (bowel cleansing), *Tanqia* (evacuation of morbid matter from the body), surgical and non surgical interventions i.e. leaching, *Amal kai* (cauterization). Since the cancer is spreading at an incredible rate in both developed and developing countries but no way of relief is ensured yet in any system of medicine. Greco-Arabic literature has rich potential to intervene in palliative way in such dreadful disease. Likewise, Ray born Razi asserted that when cancer is at the beginning, it can be kept stationary and can be prevented from ulceration. This systematic review highlights relevant Greco-Arabic literature on cancer.

Keywords: *Sartan*, black bile, temperament, liver, Greco-Arabic

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Introduction

The term neoplasia stands for new growth i.e. 'tumour'. But every new growth of cells and tissues is not neoplasm since, examples of new growth of tissues and cells are also seen in the processes of regeneration, embryogenesis, repair, hyperplasia and hormonal stimulation. Growth of these cells is under controlled mode. On the other hand, neoplastic cells don't respond to the regulation of replication and form an abnormal bunch of tissues. Therefore, neoplasm or tumour may be defined as "A mass of tissue formed as a result of abnormal, excessive, uncoordinated, autonomous and purposeless proliferation of cells even after cessation of stimulus for growth which caused it"¹.

Hippocrates (460-370BC) proposed the term *Kerkinos* for cancer of the breast. The word 'cancer' means crab, thus reflecting the true character of the disease since it 'sticks' to the part stubbornly like a 'crab'¹, the vessels on both sides of affected part are filled with filthy and thick material, which are engorged and inflamed². Nowadays it has emerged as a major public health problem in developing countries and in industrialised nations as well. Cancer cases across the world could hit 22 million a year within the next two decades³.

Cancer is a *Warm* (swelling) which is produced by excessive production and/or accumulation of black bile since liver becomes hot and dry as a result *khilt* burnt here and got morbid like sediment/ residue of

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Dam. Cancer never occurs from pure form of black bile alone hence, there is no acuteness in it, also the same matters are responsible for melancholia and perplexity^{4,5,6}.

Consumed food becomes the source products of black bile in the body and it is not absorbed properly by spleen due to its weakness. When it accumulates in the circulation and diverted toward lower limbs then it may cause *Dawali* (varicose vein), or may shed out from the vessels under the influence of *Tabiyat*. It may manifest as piles or distributing in the body as *Juzam* (leprosy) or concentrate into organs and established therein called as *Warm Sulb*. Basically, the *Sartan* and *Juzam* are of two types; one is fixed, gentle, dark yellow in colour and having less malignant characteristics. Whenever it stays inside the body longer or it acquires heat then it can turn malignant and becomes destructive in nature. The other forms of *Sartan* and *Juzam* are malignant, destructive and ulcerated form².

Distribution: - 1) Cancer may affect the following organs viz. breast (having tendency to retain thick matters), uterus, intestine, palate along the tonsil, face, nerves, stomach, penis, cornea (most painful forms of cancer, vessels are red and tense), anus, vagina and all parts of the body^{5,6,7,8,9}.

2) *Sala'a* (lipoma) is easily moveable from skin and muscle both^{4,9}.

3) *Khanazir* (lymphadenopathy) are infiltrated into muscles but free from skin; it feels colder when touched than any other organ of the body^{6,9}. Few types of *Khanazir* have carcinogenic potentials⁶.

4) *Saqiroos* / *Warm Sulb* are characterized by lack of sense, pain, burning and pulsation, but there is engorgement of veins. It is precipitated by *Warm Har* or *Saudawi Ikrudam* (sediment of blood), or pure *Sawda* or *Sawda* mixed with *Balgham* or *Balgham* alone and the colour of the affected part is similar to the colour of the body. In *Saqiroos Khalis* the organ is alive but devoid of pain, its colour is like *Usrab* (lead), stony hard and tender. It is treated with *Mubarradat* (cold) and *Lazoojat* (viscous) drugs otherwise it may turn into malignancy^{6,10}.

Predisposing factors

1) Too hot and dry temperament of liver². 2) Consumption of *Raddiul kaimoos Aghziya* (immature chyme) like cabbage, *Masoor* (lentil) pulse, cow meat, *Namak sood* (parched meat with sprinkled salt), meat of aged goat and sheep and arum for long time^{5,9,10}. 3) Weakness of spleen as it doesn't absorb the *Sawda*². 4) Burning of *Khilt Sawda*, *Safra* and *Balgham*^{4,11}. 5) Tendency to retain thick matters in

soft organs⁸. 6) Continuous secretion of *Laban Raqiq* (watery milk letting down)¹¹. 7) Continuous secretion from uterus, menstrual disorder¹¹.

Signs and symptoms

At the beginning it is difficult to diagnose¹¹. It is oval or bean or almond or walnut in shape, stony hard with irregular surface, awkward, pulsating and severely painful (intensity of pain depends upon grading of burning of yellow bile), blackish or greenish when it is advanced^{9,10}. On application of irritant drugs convulsion, fever, syncope and chills may occur¹².

The ulcer of *Sartan mutaqarreh* is black with thick secretion, margin hard and folded outwardly. Radically excised cancer also has the hard margin, yellowish exudates and bad odour. Over a long period the tissue become necrosed and senseless. Veins like legs of crab which are inclined to greenish or blackish in colour⁶.

Stages of Sartan

1) Initial stage 2) Non- ulcerated 3) Ulcerated 4) *Sartan Mustahkam* (metastasized into different organs of the body) 5) *Sartan khafi* (cancer in situ)¹².

Principle of treatment

1) Most of the *Sartan* are difficult to treat hence; the required medicine should be more potent than disease whereas no such drug exists⁸. 2) Initially it may be cured but it is not too easy, so *Tanqia* by fasd (elimination of morbid matters from whole body) is required. *Idrare Tams* (flowing menstruation), black bile purgation may be practiced up to ten times a week^{2,5,9,12}. 3) Avoid all types of difficult treatments⁶. 4) Emollients of cold and moist nature based drugs are adopted such as moist bandage uninterruptedly so that the surroundings of *Sartan* become cold^{9,12}. 5) In case of *Saqiroos*, laxative and resolvent like *Maghz Saq Gau* (marrow of cow calf), wax, *Roghan banafsha*, stag fat, ox fat, bear fat, *Goggul* are useful^{5,7}. 6) Poultice of black gram flour is useful⁹. 7) Drinking of fresh milk may be advised⁸. 8) *Itrifal gudadi* may be given¹³. 9) Local application of *Marham Rasal* may resolve the *Sartan*^{8,9}. 10) Reinforcing the involved organs by known tonic drugs, healthy and easily digestible foods⁶ e.g. *Kushkab*, *Aash jau* (barley water), almond oil, fresh fish, half boiled eggs, spinach, *Moong*, *Baqila yamaniya*, *Khayar*, *Qisa*, *Khurfa*, *small birds*, *Ma al jubn*, *Sumaq*, *goose*, *Tukhm khashkhash*, *Tukhm kaddu*, *Anar shirin*, *Khobani*, *Tukhm khayarein*, *grapes*, *Injeer*, *Ard jau*, *Batakh*, *Maush sha'ieer*, bottle gourd, apple, rose water, *Neelofar* water, *Arq gauzaban*, *Arq bed mushk*, young goat and sheep meat. For hot tempered person fresh curd of cow is useful^{5,6,9,14}. 11) If ulceration

occurs then poultice of astringent and corrosive medicine is indicated e.g. *Qalqatar*(alum), *Zangar*⁶. 12) Administration of best pain relieving and *Mujaffif qurooh* (desiccant) medicines are indicated⁶. 13) Poultice of *Todri*, water and honey should be used in non ulcerated cancer⁶. 14) In case of hard swelling of breast and ovary *Tukhme Lauf / laful haiyya/ feel gosh* may be used as resolvent. Also, it can be treated with desiccators^{6,15}. 15) Sartan can dissolve with the application of poultice of *Kankar zad / Harshaf ka Gond/ Kharee/ Sibleen (Cynara scolymys)* along with linseed seeds. Most of the cancers can dissolve by *Bartang* as it is mentioned in few writings of Alexander^{6, 15}. 16) *Itrifal kabir* is very useful in hard swelling of kidney⁸. 17) Temperament of the liver can be normalised by advising appropriate diets, drinks and poultice to avoid production of *Akhlat Muhtariqa* (burnt humour) [10]. 18) If *Warm Saqiroos* has sensation it can be cured by elimination of dominant humour from the body by bloodletting. If there is excessive black bile in blood then resolvent and laxative medicines are indicated^{5,6}. 19) *Advia muhallilah* (resolving drugs) i.e. *Tootiyah, Murdar sang, Safeda qala'i, Roghan gul* (rose oil), *Mom(wax), Qalqatar* (alum) are suggested^{9, 10}.

Treatment

In Unani medicine, few measures and many drugs are described for the purpose of treatment in cancer. Their indications are different in respect of site, stage and nature of cancer. More emphasis is given on local treatment for prevention of growth and ulceration. In ulcerated variety local treatment is advised for promotion of healing and to halt the spread. As general measure the elimination of *Sawda* from the body is recommended on regular periodic basis as the case may be. So many combinations of various drugs are indicated in different doses forms.

Initial stage

1) Continuous observation for progress of swelling and other changes¹⁰.
 2) If *Sartan* is small in size and far away from *Aza i Shareefa* (vital organs) then surgical treatment may be advised and excision may be made along with some part of healthy tissues. Later on wound may be treated with ointment. Sometimes cauterization is indicated after excision but it should be done very carefully otherwise, some other disorders may occur⁹.
 3) Sometimes it is observed that after excision of one breast the other is affected. It may be due to the transfer of cancerous material from one breast to other. *Tanqiya* is necessary with the drugs such as *Aftimoon vilaity, Ma al jubn, Ma al asl* (honey

water). The *Tabeekh* (concoction) *aftimoon* along with *Sikanjabeen* is better than *Ma al asl*. *Ayarij kharbaq* is indicated for strong tempered persons. All those drugs, which are indicated for *Juzam* and melancholic illnesses, are recommended for cancer also⁹.

4) Resolvent medicines are harmful because they dissolve the subtle matters and condense the thick matters. Drugs that do not have the extreme desiccating tendency i.e. *tootia maghsool, roghan gul* are useful¹⁰.

5) Emollient of *Hikkak Surb* (particles separated during the grinding) grinded with coriander water, *Kasni* water and extract of *kahu* are beneficial. In addition, *Hikkak Surb*, grinded with *Tootia, Safeda kashgari* can be used as *Tila*^{10, 14}.

6) Poultice of *Gile Armani, Gil Makhtoom* and extract of *Kahu* or extract of *Haiyul Alam(Catharanthus roseus)* are recommended. Lead base slab and pestle are used to prevent growth and ulceration of cancerous tumour¹⁰.

7) If *Sartan* manifests as burning, hot, pulsatile swelling then *Sartan Nahri* (crab) freshly cooked with *Aqlimiya i Nuqra*(sediment of silver) is advised as *Tila* (emollient). Also, *Gil Armani* dissolved in vinegar is very useful as *Tila*¹⁰.

8) Few types of lymphadenopathy are inclined to turn into cancer. It is treated in the form of poultice based on *Beekh Sosan, Tukhm katan, wine, Panjal kabootar* and *Roghan gul*. All these drugs are of hot temperament⁹.

9) Razi stated that I have treated a cancer patient by elimination of morbid matters from the body in every spring by using strong purgative drugs of black bile⁶. Ibn Sina said that one of my predecessors had excised a cancerous breast radically thereafter cancer developed in other breast. I think that the second breast might have been on its way to develop cancer from the first breast⁹.

Treatment of Sartan Mutaqarreh (Ulcerated cancer)

1) For the treatment a piece of linseed cloth is soaked in *Mako* water and placed on ulcer till it dries, and the procedure is repeated again and again¹⁰. Ibn Sina has added in this prescription wheat water, *Loban, Safeda qalai, Gile makhtoom, Gil armani, Sibr maghsool*. If ulcer is oozing then drugs like starch, *Kundur, Safeda kashgari* are applied as dusting powder otherwise as ointment based on *Roghan gul*^{9,10}. 2) Ash of *Sartan nahri* and *Aqlimiya* (sediment of silver) both in equal amount are mixed well with *Roghan gul* and *Mom roghan(wax)* and

are used as *Tila*¹⁰. Sometimes *Tootiya Maghsool*, water of *Khurfa* and viscous extract of *Isabghol* can be added in said *Tila*⁹. 3) *Hikkak surb* grinded with extraction of *Khurfa* leaves or *Kahu* or *Haiyul Alam* or viscous of *Isabghol* may be used as emollient¹⁰. 4) Drugs of mineral origin are good for local application like *Tootiya Maghsool* along with *Roghan Gul* or *Roghan Khiri* / wall flower (*Cheiranthus cheiri*)^{6,9,16}. 5) Affected organs should be reinforced by *Advia Radi'a* and *Lutookhat ma'adnya* such as *Lutookh Buradai Sang Asia* (millstone) and powder of *Hajrul mas* (whetstone)⁹. In few *lutookh* along with froth of mortar, *Gil Makhtoom*, *Gil Armani*, *Zait Infaq*, water of *Haiyul Alam*, *Safeda Kashgari*, extract of *Kahu* leaves, viscous extraction of *Isabghol*, *Safeda Qalai* may be added⁹. 6) Grapes may be used as poultice^{6,9}. 7) Ulcerated cancer should be excised radically or can be treated with desiccative drug which dries and sedate the corrosion^{6,9,10}. 8) Camel milk, cow milk, *Safed Ranga* (tin), *Gil Armani*, *Elwa Magsool* all are grinded and used as *Zaroor* (dusting powder) in ulcerated lesion otherwise *Roghan Zaitoon* added and applied in non ulcerated cancer¹³. 9) *Gil Armani*, *Gil Makhtoom*, and vinegar are pulverized on pestle (made by *Ranga*) and mortar (made by lead) when they become thick are used as *Tila*¹³. 10) Cold extracts are indicated in *Sartan mutaqqarreh* and *Qurooh Sartaniya*⁶. 11) *Tootiya Maghsool* (washed) is a drug of choice for *Qurooh Sartaniya*⁶. 12) If cancer is on exposed part of the body, bloodletting is advised first from the surrounding engorged areas followed by surgical treatment. Most of the physicians did not recommend surgical treatment, except in advanced, ulcerated and painful cases or in that organ where complete removal along with all affected tissues is possible, followed by cauterization⁶.

Sartan Makhfi / Batini (Dormant cancer)

1) Dormant cancer should not be touched otherwise patient may die, so no treatment should be made as suggested by Hippocrates^{6,9}. Razi said I have seen few patients who were operated for the case of oropharyngeal, anal, vaginal and mouth cancer followed by cauterization, but no one was cured⁶. 4) *Fasd* of basilic vein and cephalic vein is indicated in uterine cancer followed by uterine enema based on coriander which is grinded with pestle of lead till it turns black⁸. 5) Poultice based on *Khashkhash*, green coriander, *Mako*, egg albumin and *Roghan Gul* is advised. Along with decoction of *Hulba* (*Trigonella foenum*), lukewarm enema is used for getting pain relief⁸. 6) *Mom roghan* made from *Mom zard* and *Roghan*

gul is used as *Tila*⁸.

7) If there is excessive bleeding then extract of *Lihyatut tees*, *Gil armani*, *Safeda kashgari* and *Bartang* are indicated as enema⁸.

Sartan Mustahkam (Established cancer)

It is very difficult to treat it, but if it occurs on exterior parts of the body then surgical treatment is ultimate choice. Bolus said "surgical treatment is made exclusively for those cases of cancer which appeared around the nose, breast and fingers. If it is deep rooted or close to any vital organs then surgery should be avoided. Surgical procedure is adopted in round way pattern, along with diseased portion some part of healthy tissues also may be removed so that it will never occur again. Thereafter, cauterization may be done and such drugs are applied which remove the necrosed tissues. Later on ointment may be applied for wound healing". According to description of "Heelatul barr" "elimination of *Sawda* from the body at first, followed by surgical treatment and ensuring no portion of diseased tissues is left, ensure profuse shedding off blood until all filthy materials come out, at last wound may be treated"¹².

Apart from aforementioned description, few drugs herewith are also being pointed out which have anti cancerous property as cited in different classical texts of Unani medicine and reported in the contemporary research. Also, these have been established by contemporary sciences as having anti cancerous property along with minimal adverse effects on the body through various mechanisms of actions.

- 1) Jamun (*Syzygium cumini*) polyphenols¹⁷
- 2) Bazr-e-katan (*linum usitatissimum*)^{9,18}
- 3) Yabrooj (*Atropa belladonna*)^{9,19}
- 4) Kibr (*Capparis spinosa*)^{9,20}
- 5) Kernab (*Brassica oleracea*)^{9,21}
- 6) Lisan-ul-hamal (*Plantago major*)^{9,22}
- 7) Miql-ul-yahood (*Boswellia serrata*)^{9,23}
- 8) Mom (bees wax)^{9,24}
- 9) Khayar shambar (*Cassia fistula*)^{9,25}
- 10) Zarareeh (Blister bees)^{9,26}
- 11) Betulinic acid from the bark of several species of plants, principally the white birch (*Betula pubescences*)²⁷
- 12) Camptothecin, irinotecan, and topotecan from happy tree (*Camptotheca acuminata*)²⁸
- 13) Capsaicin from pepper (capsicum)²⁹
- 14) Curcumin from turmeric (*Curcuma longa*)³⁰
- 15) Etoposide from mandrake (mandragora)³¹
- 16) Lapachol from trumpet tree (*Tabebuia* sp.)³²
- 17) Paclitaxel (taxol) from pacific yew (*Taxus brevifolia*)³³

- 18) Podophyllotoxin from may- apple (*Podophyllum peltatum*) (bahar jawani)³⁴
- 19) Vinblastine and vincristine from Madagascar periwinkle plant (*Catharanthus*)³⁵
- 20) Etoposide from sporangium cellulose bacteria³⁶
- 21) Ersa (*Iris ensata*)⁹, Anjoosa (*Alkanna tinctoria*)⁹, Baan (*Moringa pterygospermum*)⁹, Zuft (pitch)⁹, Marfseesa (Iron sulphide)⁹, Todri (*Lipidum iperis*)⁹, Angoor (*Vitis vinifera*)⁹, Maul hindiba (*Chicorium intybus*)³⁷, Muqil (*Commiphora mukul*)⁹, Zafran (*Crocus sativus*)³⁷, Kalonji (*Nigella sativa*)³⁷, Garlic (*Allium sativum*)³⁷, Onion (*Allium cepa*)³⁷, Arsenic etc.

Conclusion:

It is clear by going through all the literature related to *Sartan* that Greco-Arabic writings especially by Majusi, Tabri, Razi, Ibn Sina, and Ismail Jurjani have plentiful assets in this regard. The above discussion shows that earlier scholars were familiar with all varieties of *Sartan*. Also, their comprehension regarding pathology, differential diagnosis and line of treatment of *Sartan* is on rational basis. Herewith, it is said that the contemporary knowledge of cancer is not evolved recently but it is a continuation of earlier sciences. There are great assets regarding the *Sartan* in Greco-Arabic texts which provide the potential for healing the dreaded wound of mankind.

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