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Proceeding Paper

The Beneficial Effects of Traditional Iranian Medicine for Cancer Therapy †

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Abstract: Traditionally, Middle Eastern herbal medicines, especially traditional Iranian medicines (TIM), have been used by cancer patients both during and after active cancer treatments. Medicinal plants and herbs which are common in traditional Iranian medicine are considered to be less toxic and less expensive than chemical drugs. Alkaloid anti-cancer compounds are pyrrolidine, tropane, pyridine, piperidine, quinolizidine, pyrrolizidine, isoquinoline, indolizidine, isoxazaole, oxazole, quinoline, quinazoline, purine, indole serin, colchicine, β-phenylethylamine, abornin, benzylamine, narciclasine, and pancratistatin. Anticancer terpenoids compounds from medicinal plants and herbs are alpha-hederin, isoprene, galanal A, galanal B, oleanane, carnosol, and xanthorrhizol. Anticancer phenolic compounds from medicinal plants are kaempferol, flavones, flavonol, curcumin, luteoline, chalcone, apigenin, and cafesterol. All relevant papers in the English language from different research using the keywords traditional Persian medicine, traditional Iranian medicine, natural products, and cancer were collected from PubMed, Google Scholar, and Science Direct. Some of the most important medicinal plants and herbs in the middle east, especially in Iran, with anti-caner activities are *Acorus calamus*, *Aracia seyal*, *Allium ascalonicum*, *Allium cepa*, *Agaricus campestris*, *Aloe vera*, *Allium sativum*, *Apium graveolens*, *Anethum graveolens*, *Arum palaestinum*, *Artemisia absinthium*, *Beta vulgaris*, *Astoma seselifolium*, *Brassica oleraceae*, *Brassica nigra*, *Boswellia carterii*, *Capparis spinosa*, *Bryonia syriaca*, *Ceterach officinarum*, *Cassia senna*, *Cichorium intybus*, *Chrysanthemum coronarium*, *Citrullus colocynthis*, *Cinnamomum camphora*, *Crataegus azarolus*, *Crocus sativus*, *Cucumis melo*, *Nigella sativa*, *Olea europaea*, *Peganum harmala*, *Punica granatum*, *Pistacia lentiscus*, *Zingiber officinale*, *Thymus vulgaris*, *Vitis vinifera*, *Viscum cruciatum*, and *Urtica pilulifera*. Iranian medicinal plants and herbs should be considered more as a notable and great potential source of novel chemical ingredients with anti-cancer activities.

Keywords: natural products; ginger; traditional Asian medicine; traditional Iranian medicine; Artemisia; olive; anti-cancer activity

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1. Introduction

Traditional medicine has been used for centuries in different parts of the world [1,2], and it plays a key role in the middle east [3]. Traditional Iranian medicine (TIM) could likely improve quality of life, improve therapeutic outcomes, and it is an effective adjuvant in the systemic treatment of cancer [4]. Traditional Iranian medicine has a long history, and it is deeply rooted in Persian civilization and culture [5].

Cancer is the second cause of mortality in the world, and it is increasing day by day. One of the most notable factors in TIM is a focus on the contribution of special foods and diet to cancer management. Moreover, understanding the complex synergistic interaction of different components of anticancer plants and herbs, and of course the herbal formulation in different traditional medicinal philosophies, can be managed and designed to control cancerous cells without affecting normal cells.

In the review article, we have tried to indicate the importance of traditional herbs and plants from the middle east, especially from those plants which are common in ITM with positive influences on both the prevention and treatment of cancer.

2. Traditional Iranian Herbal Medicines as Natural Anti-Cancer Drugs

The term cancer applies to a large group of diseases which can influence any part of the body, and cancer is the most important non-communicable disease and the main cause of death in the world [6–8]. According to Iranian traditional medicine, cancer has been categorized under swellings and classified as cold swelling and solid tumors [9,10]. There are more than 3000 plants with anti-cancer activities in the world [11–13]. It has been reported that plants with anticancer effectiveness include high levels of polyphenols or other potential antioxidants which isolate antioxidants in the context of cancer [14,15]. Some of the most important isolated phytochemical compounds with anticancer activities are βsitosterol, physcione, 2-oxo-3-propyl-2H-chromene-7-carboxylic acid, stigmasterol, 3-ethyl-7-hydroxy-2H-chromen-2-one, bergapten, and graveolone from the roots of *Anethum sowa* L. [14]. It has been suggested that TIM can be considered as a helpful starting point in the field of cancer drug discovery, while Ahmad et al. [14] found the importance of both traditional Arabic and Islamic herbal-based medicine in the treatment of new cancers with low toxicity and minimal negative effects. It has been revealed that Judas tree (*Cercis siliquastrum*) flowers and leaves have antimicrobial and antioxidant effects, and they have significant role in inducing cell cycle arrest in the G2/M phase and initiate programmed cell death by apoptosis [15–17]. Some of the most common medicinal plants in Middle Eastern traditional science which are useful in treatment of cancer are Acacia, sweet flag, leek, onion, mushroom, dill, aloe, garlic, wormwood, celery, beet-root, astoma, mustard, olibanum, caper, syrian bryony, wild cabbage, chicory, crown daisy, senna, yellow pincushion, azarole, myrrh, colocynth, camphor, chamomile, saffron, hawthorn, olive, black cumin, bunchflower daffodil, pomegranate, mastic tree, African rue, ginger, thyme, grapes, red-berry mistletoe, and stinging nettle [14,17]. Some of the most important medicinal plants from ITM which have anticancer activities are nettle, wild chamomile, swarf elder, chaste berry, fern, yarrow, monk's pepper, stinking chamomile, capers, St. John's wort, iris, wolfberry, lycion, buckthorn, horsetail, and spurge.

3. Conclusions

The most important effects of traditional medicines, Iranian and Arabic included, are in preventing cancer occurrence, decreasing post operative complications, reducing side effects, decreasing post operative recurrence, maintenance therapy, prolonged survival, slowing down of tumor growth, and palliate symptoms. The most important medicinal plants and herbs which are used in the middle east for the prevention and treatment of cancers are *Acorus calamus*, *Acacia seyal*, *Allium ascalonicum*, *Agaricus campestris*, *Allium sativum*, *Allium cepa*, *Anethum graveolens*, *Aloe vera*, *Artemisia absinthium*, *Astoma seselifolium*, *Arum palaestinum*, *Boswellia carterri*, *Beta vulgaris*, *Brassica oleraceae*, *Brassica nigra*, *Capparis spinosa*, *Bryonia syriaca*, *Ceterach officinarum*, *Cassia senna*, *Cichorium intybus*, *Chrysanthemum coronarium*, *Citrullus colocynthis*, *Cinnamomum camphora*, *Crataegus azarolus*, *Commiphora molmol*, *Cucumis melo*, *Crocus sativus*, *Nasrcissus tazetta*, *Matricaria aurea*, *Olea europaea*, *Nigella satia*, *Pistachia lentiscus*, *Peganum harmala*, *Vitis vinifera*, *Viscum cruciatum*, *Urtica pilulifera*, *Zingiber officinale*, *Thymus vulgaris*, *Quercus calliprinos*, and *Punica granatum*. The most notable chemical structures of anticancer drugs derived from medicinal plants are vinblastine, vincristine, vindesine, vinorelbine, paclitaxel, vinflunine, cabazitaxel, docetaxel,

milataxel, larotaxel, camptothecin, tesetaxel, topotecan, irinotecan, teniposide, etoposide, homoharringtonine, and harringtonine. Iranian traditional medicines which have both the ability to promote immunity and antiviral activity would have possible inhibition capability in the promotion and initiation of virus-associated cancers.

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