OVERVIEW ON THE THERAPEUTIVE VALUES OF *Carthamus tinctorius L.*

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**ABSTRACT**  
The use of plant derivatives as the source of medicine to treat many diseases has become a universal among non-industrised sectors. More than two third of the World’s plant species, 35,000 plants are known for its medicinal values. The phytochemicals produced by the plants proved to have normal metabolic activities in human body and serve more specific functions. The present article, emphasize the importance of safflower, which is an annual plant, glabrous, branching stem of 1-3 feet high and are alternate, sessile, oblong, dark green, shiny leaves with orange or yellow flowers.

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INTRODUCTION

Plants, synthesize a wide variety of chemicals which has specific biological functions. About 12,000 phytochemicals has been isolated and 10% of it are used in the traditional medicines to cure many diseases. WHO estimated about 80% of the population in Asia and Africa are behind herbal medicine. The safflower cultivation is one of the oldest crop with known economical importances. The extracted chemical from the plant is used as textile dyes in the twelfth dynasty and the flower garland of safflowers were found in the tomb of Pharaoh Tutankhamun [1]. Greek reports by John Chadwick also expressed about safflower in Linear B tablets [2] and they are represented as carthamine in the nineteenth century [3]. About 6,00,000 tons are produced commercially in more than sixty countries Worldwide and are abundant in Afghanistan an dtribal belts of Pakistan [4].

DESCRIPTION OF THE PLANT

*Carthamus tinctorius* L. (Safflower) is an annual and a member of the Compositae or Asteraceae family [5,6]. The whole plant parts (Stem, leaves, seeds and flower) are used for various purposes (Dye, oil, drugs etc.) [7]. Safflower’s flower is used as medicine and food industry [8]. Each seed germinates to produce a central stem to form a young thistle with branches (upto 36 inches) [9]. Safflower plant is more drought resistant and each branch may produce one to five flower heads. The flower heads (Yellow or orange or red) ranges from one inch to few and produces 15 to 30 seeds [10]. The taxonomic classification of safflower is as follows

| Kingdom | : Plantae |
| Order | : Asterales |
| Family | : Asteraceae |
| Tribe | : Cynarea |
| Genus | : Carthamus |
| Species | : tinctorius |

THERAPEUTIC VALUE OF SAFFLOWER OIL

Traditionally, the plant was grown for its economic value of seeds (vegetable oil), red (carthamin), yellow and aniline dyes [11]. Safflower seed oil is known for its flavorless, colorless and nutritionally similar to sunflower oil used for cooking, salad dressings etc. [12]. Safflower oil is similar to sunflower oil in all properties (Flavor, color, nutrition) and used for cooking, salad dressing etc. [12]. Safflower oil contains high percentage of oleic acid (monosaturated fatty acid) and linoleic acid (Polyunsaturated fatty acid). Linoleic acid extracted from safflower is used instead of linseed oil in painting [13] and used in diet to increase (a protein) which helps to regulate blood glucose level and improves fatty acid breakdown [14]. A clinical trial with a group of patients with replacement of safflower in the diet reported that there was an increase of omega-6-linoleic acid which has reduced total cholesterol [15].

The constituents of safflower oil is represented in the Table 2 and many other researches reported that the various phytochemicals from the Safflower extract such as Kinobone A [16,17], flavonoids [18], saffor yellow A [19], erthro-alkane-6-8,diols [20], serotonin [21], tinctomine [22].

<table>
<thead>
<tr>
<th>S.No</th>
<th>CONSTITUENTS</th>
<th>AMOUNT (%)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Palmitic</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Oleic acid</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>Linoleic acid</td>
<td>74</td>
</tr>
<tr>
<td>4</td>
<td>Omega-6-linoleic acid</td>
<td>8</td>
</tr>
</tbody>
</table>

Evidences through research shows these phytochemicals have pharmacological properties such as anti oxidant [23], anti hypertension [24], inhibition of pro inflammatory cytokine production [25], production of bone [26]. Safflower seed oil is used for preventing heart diseases, atherosclerosis (hardening of arteries) and stroke [27]. The oil is used for painful menstrual periods and flower to cause abortion by women [28]. Carthamin from flower of safflower is effective on circulatory system related diseases [29], purgative [30], swelling associated with trauma, chronic and atrophic gastritis [31]. The plant parts are reported effective as anti inflammatory [32, 33], anti tumor [34], treatment of cardiomyopathy [35] and gynecological diseases [36].

Safflower oil showed inverse relationship of breast cancer risk [37] and also showed a significant dose dependent inhibition in cell proliferation in MDA-MB-231 breast cancer cells during cytotoxic study [38]. The linoleate (In triglycerate form) of safflower oil has proved to be very efficient inhibitor in malignant melanoma growth over normal melanocytes [34]. Another interesting clinical trial proved that the ingestion of 60 ml safflower oil in the diet of the patient has increased platelet linoleic acid content from 5.53 µg to 10.1 µg of total fatty acid and it resulted in a decrease in platelet aggregation [39]. *In vivo* study on platelet aggregation time significantly increased within 48 hours with the increase of dietary linoleate of 4% of calories and disaggregation time decreased significantly in 96 hours [40].

CONCLUSION

Safflower plant has proved to have high therapeutic value in the modern medicine. Evidences of the research also needs more clinical trials to prove that the oil produced by the plant is off cent percent value with less side effect and at very low cost.
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