HepTop Saffron

Crocin

Fore More Information

@heptopsaffron

Visit Our Website

www.heptopsaffron.com

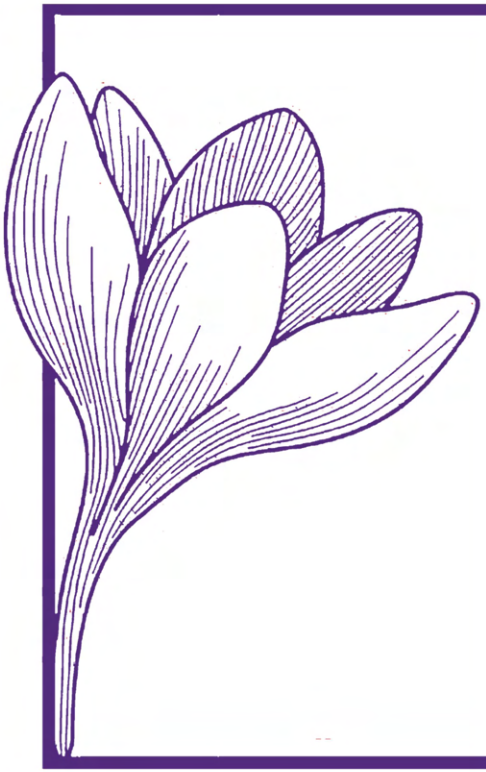
info@heptopsaffron.com

HepTop Saffron

Crocin

Heptop Saffron

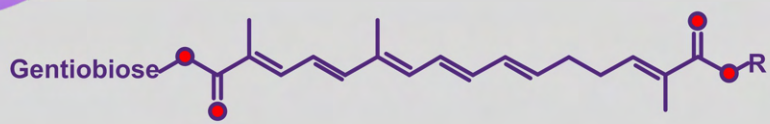
HepTop Saffron



HepTop Saffron

Our company proudly, as one of the leaders in the production of crocin based on saffron, has a unique experience in the field of technology and innovation in this industry. Taking advantage of deep knowledge in the field of saffron cultivation and processing, we produce high quality products with a special flavor.

What's Crocin?

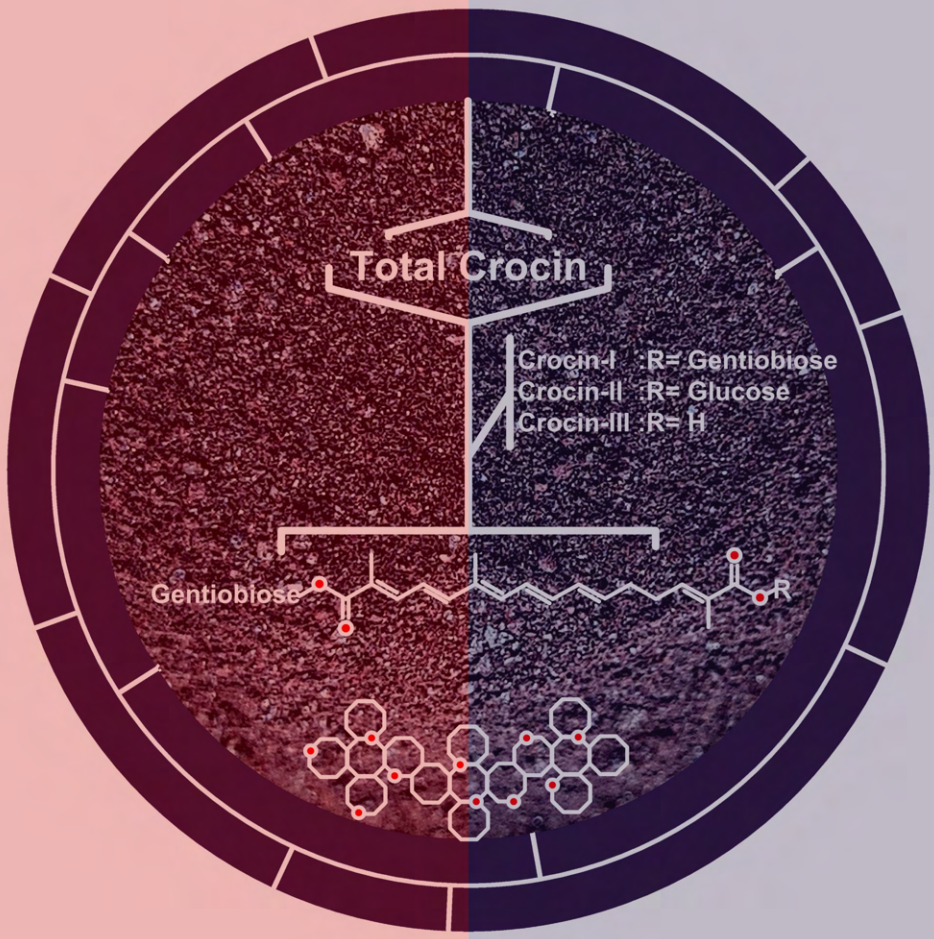


Crocin is one of the Carotenoid compounds that just presented in saffron and gardenia. Crocin is synthesized only by plant itself and like other natural compounds which is usually found in plants.

Product Name		Crocin Compound (Dye Content : Upper Than %98)	
Brand		Tinab Shimi Co.	
Product	Product	CAS-No	Percent Of Total
CAS-No	Crocin-I	42553-65-1	67%
	Crocin-II	55750-84-0	27%
	Crocin-III	55750-85-1	4%


RESULTS
Gentiobiose
R
Total Crocin

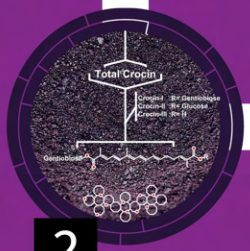
Introduction Of Crocin



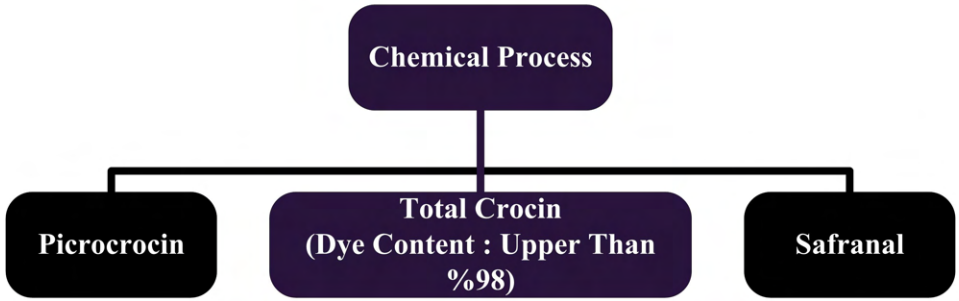
Introduction of Crocin

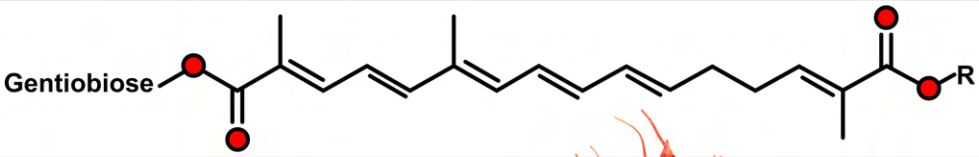
Herbal plants have been used for folk medicine since immemorial times and still used in developing countries as the primary source of medical treatment. Thus, research has developed into investigating the potential properties and uses of terrestrial plants extracts for the preparation of potential nonmaterial based drugs for diseases including cancer. Many plant species are already being used to treat or prevent development of cancer. Cancer is a major public health problem worldwide. Currently, cancer is the second leading cause of death and its incidence is expected to be more than heart disease in upcoming years. The most important considerable features of cancer cells are uncontrolled proliferation, up-regulated differentiation, and immortality. Therefore, there is a focus on treatment of cancer by using of the medicinal plants. One of the ancient pharmaceutical planets that used as medicinal plants in almost all cultures of the past to the present is saffron (Crocus sativus L.) and its main constituents.

Crocin, is a color agent and a unique water-soluble carotenoid pigment of the stigmas of saffron. Anticancer activities of crocin and crocin derivatives have been demonstrated in a wide spectrum of human cancer and the research findings on pharmacological properties of saffron and its constituents are similar to findings as described by Avicenna. There are four chemical analogs of crocin, including crocins. All of these analoges are glycosides of trans- crocetin, as a carotenoid derivative. Among the four above mentioned crocins, crocin (crocin; alpha-crocin; crocetin digentiobiose ester) is the most abundant in saffron and has been extensively studied for its pharmacological effects. Crocin with the chemical structure of $C_{44}H_{64}O_{24}$ is the major reddish yellow pigment of saffron and when in the higher purity is purple to blue color. Crocin, as main active components of saffron, has showed strong beneficial properties for utilized in different industries such as pharmaceutical, food and cosmetic applications.

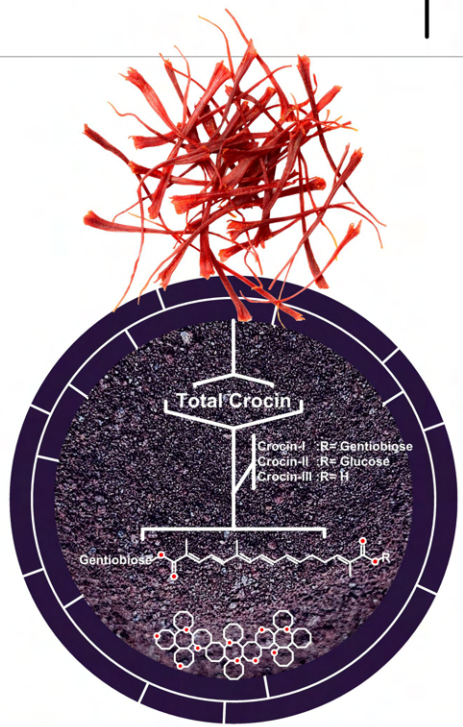


1- Structure

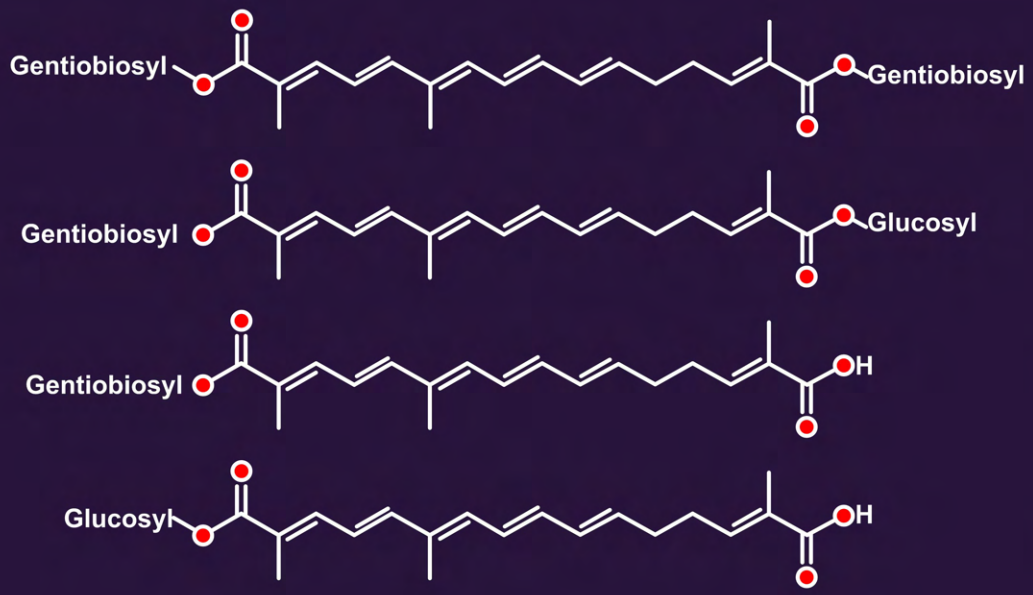


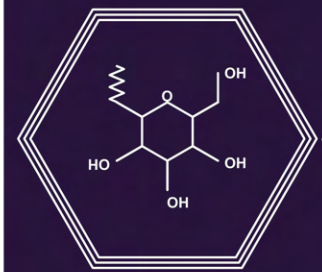


Crocin-I :R= Gentiobiose
Crocin-II :R= Glucose
Crocin-III :R= H



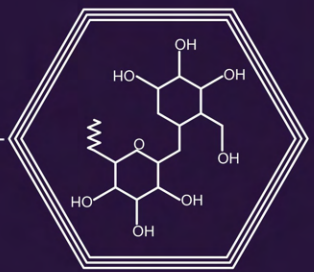
1.1- 2D Structure





-Glucosyl Sugar Moiety

Gentiobiosyl Sugar Moiety-



2- Pharmaceutical applications

Crocin is possessed treatment or improvement of many diseases by beneficial properties .Recent studies have boosted interest in its medicinal properties as antioxidants ,antitumorigenic, memory enhancers, antidepressants and anxiolytics, aphrodisiac, Geno protectives, antitussives, cardio protectives, neuroprotective and too many other activities are a small part of the conducted studies on the medicinal usage of crocin.

3- Mechanism of action

Studies have shown that crocin have therapeutic effects by using different functional mechanisms. The studies indicated that crocin by inhibiting amyloid β-peptide fibrillogenesis, (formation and deposition in the brain) acts as an anti-Alzheimer agent. Crocin could decrease cholesteryl esters (CE) in macrophages and uptake of Oxidized low-density lipoprotein (Ox- LDL), inhibiting the formation of foam cell, which would promote the initiation and progression of atherosclerosis. Crocin exerted antiatherosclerotic effects through decreasing the level of Oxidized low-density lipoprotein (Ox-LDL) that plays an important role in the initiation and progression of atherosclerosis. Other researchers demonstrated that antioxidant and neuroprotective properties of saffron and crocin protect photoreceptors against oxidative damages in the early stages of age-related macular degeneration. Antidepressant properties of crocin (affected on dopamin) are related to regulating neurotransmitters level in the brain.

4- Other Uses of Crocin

Saffron is a natural food coloring agent and crocin is major color pigment of saffron. Crocin shows good overall performance as food colorant because of its stability against light, oxidation, microbiological attack and changing environmental condition such as temperature and ph.

Due to the beneficial properties and non-toxic effect, less side effect, medicinal value and natural nature, crocin can be used in food products and pharmaceutical industry.

On the other hand, Saffron extracts and crocin can be used in formulation of sun protection lotions and creams for protection the skin form sunlight exposing and any environmental damaging elements.

Skin is constantly under attack by free radicals-damaging molecules that comes from UV light and from other sources, such as pollution, cigarette smoke and more.

Crocin (an antioxidant agent) can be preventing of many common diseases by taming harmful free radicals. Aging of skin is the result of the oxidation of free radicals in the skin and crocin scavenge light-induced free radicals thereby reducing the damaging effects of long term exposure to UV on skin cells.

6- Packing

Crocin is stable in air and sunlight. However, we select a package which could avoid oxygen and sunlight. In this case, we provide two kinds of packages to choose. The first one is vacuum foil bag, and the second one is plastic bottle (polyethylene).

6- Refernces

1.Sivaraj R, Rahman PKSM, Rajiv P, Vanathi P, Venckatesh R. Biosynthesis and characterization of Acalypha indica mediated copper oxide nanoparticles and evaluation of its antimicrobial and anticancer activity. Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy. 2014; 129:255–258.

2.Siegel RL, Miller KD, Jemal A. Cancer statistics. CA Cancer J Clin 2015;65:5-29.

3.Johnson IT. Phytochemicals and cancer. Proc Nutr Soc 2007;66:207-215.

4.Bostan HB, Mehri S, Hosseinzadeh H. Toxicology effects of saffron and its constituents: a review. Iran J Basic Med Sci 2017;20:110-121

5.Bathaie SZ, Farajzade A, Hoshyar R. A review of the chemistry and uses of crocins and crocetin, the carotenoid natural dyes in saffron, with particular emphasis on applications as colorants including their use as biological stains. Biotech Histochem 2014;89:401-411.

6.Mard SA, Akbari G, Dianat M, Mansouri E. Protective effects of crocin and zinc sulfate on hepatic ischemia-reperfusion injury in rats: a comparative experimental model study. Biomed Pharmacother 2017;96:48-55.

7.Hosseini A, Razavi BM, Hosseinzadeh H. Saffron (Crocus sativus) petal as a new pharmacological target: a review. Iran J Basic Med Sci 2018;21:1091-1099.

8.Iborra J, Castellar MR, Cánovas MA, Manjón AR. TLC preparative purification of picrocrocin, HTCC and crocin from saffron. J Food Sci 1992;57:714-716.

9.Mard SA, Akbari G, Mansouri E, Parsanahad M. Renoprotective effect of crocin following liver ischemia/reperfusion injury in Wistar rats. Iran J Basic Med Sci 2017;20:1172-1177.

10.Hosseinzadeh H., Noraei N.B., 2009. Anxiolytic and hypnotic effect of Crocus sativus aqueous extract and its constituents, crocin and safranal, in mice. Phytother. Res. 23, 768–774.

11.Ochiai T., Ohno S., Soeda S., Tanaka H., Shoyama Y., Shimeno H., 2004. Crocin prevents the death of rat pheochromyctoma (PC-12) cells by its antioxidant effects stronger than those of a-tocopherol. Neurosci. Lett. 362, 61–64.

12.Soeda S., Ochiai T., Paopong L., Tanaka H., Shoyama Y., Shimeno H., 2001. Crocin suppresses tumor necrosis factor-alpha-induced cell death of neuronally differentiated PC-12 cells. Life Sci. 69, 2887–2898.

13.Abdullaev F.I., 2002. Cancer chemopreventive and tumoricidal properties of saffron (Crocus sativus L.). Exp. Biol. Med. 227, 20–25.

14.Aung H.H., Wang C.Z., Ni M., Fishbein A., Mehendale S.R., Xie J.T., Shoyama C.Y., Yuan C.S., 2007. Crocin from Crocus sativus possesses significant antiproliferation effects on human colorectal cancer cells. Exp. Oncol. 29, 175–180.

15.Escribano J., Alonso G.L., Coca-Prados M., Fernandez J.A., 1996. Crocin, safranal and picrocrocin from saffron (Crocus sativus L.) inhibit the growth of human cancer cells in vitro. Cancer Lett. 100, 23–30.

16.Garc-Olmo D.C., Riese H.H., Escribano J., Onta J., Fernandez J.A., Atiénzar M., Garcí-Olmo D., 1999. Effects of long-term treatment of colon adenocarcinoma with crocin, a carotenoid from saffron (Crocus sativus L.): an experimental study in the rat. Nutr. Cancer 35, 120–126.

17.Mousavi S.H., Tayarani N.Z., Parsaee H., 2010. Protective effect of saffron extract and crocin on reactive oxygen species-mediated high glucose-induced toxicity in pc12 cells. Cell. Mol. Neurobiol. 30, 185–191.

18.Abe K., Saito H., 2000. Effects of saffron extract and its constituent crocin on learning behaviour and long- term potentiation. Phytother. Res. 14, 149–152.

19.Ghadrdoost B., Vafaei A.A., Rashidy-Pour A., Hajisoltani R., Bandegi A.R., Motamedi F., Haghighi S., Sameni H.R., Pahlvan, S., 2011. Protective effects of saffron extract and its active constituent crocin against oxidative stress and spatial learning and memory deficits induced by chronic stress in rats. Eur. J. Pharmacol. 667, 222–229.

20.Hosseinzadeh H., Ziaei T., 2006. Effects of Crocus sativus stigma extract and its constituents, crocin and safranal, on intact memory and scopolamine-induced learning deficits in rats performing the Morris water maze task. J. Med. Plants 5, 40–50.

21.Pitsikas N., Zisopoulou S., Tarantilis P.A., Kanakis C.D., Polissiou, M.G., Sakellaridis, N., 2007. Effects of the active constituents of Crocus sativus L., crocins on recognition and spatial rats memory. Behav. Brain Res. 183, 141–146.

22.Alavizadeh S. H., Hosseinzadeh H., Bioactivity assessment and toxicity of crocin: A comprehensive review, Food and Chemical Toxicology 64 (2014) 65–80.

23.Lopresti AL, Drummond PD, Saffron (Crocus sativus) for depression: a systematic review of clinical studies and examination of underlying antidepressant mechanisms of action. Hum Psychopharmacol. 2014 Nov;29(6):517-27.

24.Natural food colours: Surbhi Sharma Mumba

25.Evaluation of antioxidant activities of bioactive compounds and various extracts obtained from saffron (Crocus sativus L.): a review: Somayeh Rahaiee & Sohrab Moini & Maryam Hashemi &Seyed Abbas

26.DD.Williamson company, https://www.ulprospector.com/en/eu/Food/Detail/11393/355983/Saffron?st=1&sl=61409784&crit=a2V5d29yZDpbc2FmZnJvbiBjcm9jaW5d&ss=2&k=saffron|crocin&t=saffron+crocin

27.https://iacmcolor.org/color-profile/saffron/

Fekrat H, 2004. R & D Department, Tarvand Saffron Canada Inc. The Application of Crocin and Saffron Ethanol–Extractable Components in Formulation of Health Care and Beauty Care Products.

Certificate of analysis

Product Name: Crocin (purified from saffron)

Lot number: 9801 **Date of Manufacture:** 2023-12-10

Constituents:

Crocin-I **(Crocetin digentiobiosyl ester)**

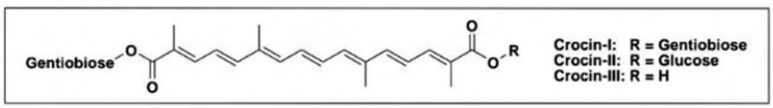
CAS No.	42553-65-1	Formula	$C_{44}H_{64}O_{24}$
Molecular Weight	976.96 g/mol	Type of Compound	Diterpenoids

Crocin-II **(Crocetin gentiobiosylglucosyl ester)**

CAS No.	55750-84-0	Formula	$C_{38}H_{54}O_{19}$
Molecular Weight	814.83 g/mol	Type of Compound	Diterpenoids

Crocin-III **(Crocetin monogentiobiosyl ester)**

CAS No.	94238-00-3	Formula	$C_{32}H_{44}O_{14}$
Molecular Weight	652.69 g/mol	Type of Compound	Diterpenoids



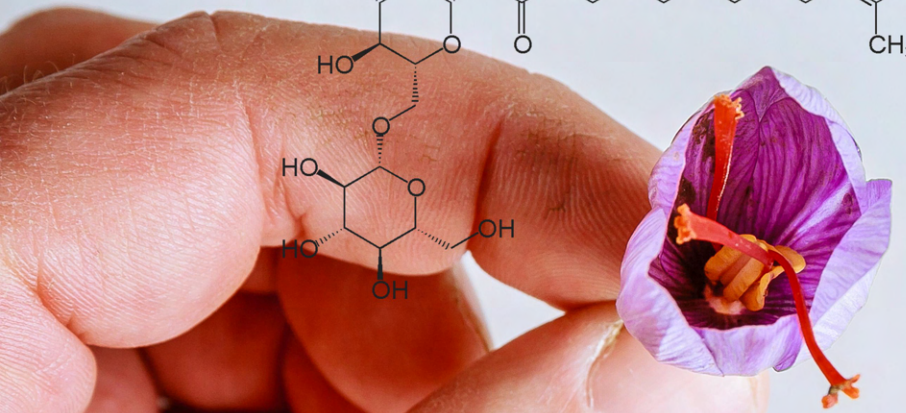
Test Name	Specifications	Result
Appearance	Violet solid	Conforms
Melting point	185-187 °C	Conforms
Assay (by HPLC, % w/w)	Dye content of dried powder, Total percentage more than 97% w/w	Crocin-I ~ 69 % Crocin-II ~ 27 % Crocin-III ~ 4 %
Heavy metals (ICP)	Not more than 1 ppm	As 0.019 ppm Cd 0.002 ppm Hg 0.007 ppm Pb 0.144 ppm
Loss on drying (90°C)	< 6%	~ 5 %
Solubility	Soluble in water, DMSO and ethanol	Conforms
Storage Temperature:	2- 8 °C	-

Prepared By	Checked By	Approved By

HepTop Saffron

HepTop Saffron

Crocin



Fore More Information

@heptopsaffron

Visit Our Website

www.heptopsaffron.com

info@heptopsaffron.com