



Crocus sativus L. – Saffron

***Crocus sativus* L. 1:20 Fluid extract**

Common Names: Saffron, Hay saffron, Crocus, Fan-Hong-Hua

Botanical family: Iridaceae

Part Used: Dried stigma

Dosage: 10-25 ml per week

Primary Active Constituents: α - & β -carotenes including crocin, crocetin, zeaxanthin & lycopene; safranal, picrocrocin, flavonoids quercetin & kaempferol, B vitamins especially B2.

Contraindications: Avoid in known allergy. Possible additive effects with hypotensive, hypoglycaemic, anticoagulant and antiplatelet medications. Avoid during pregnancy & lactation, as safety has not been established. Traditionally, higher doses have been used to induce labour, and as an abortifacient.

Actions:

Antidepressant, neuroprotective, cognitive enhancer, antioxidant, anti-inflammatory, anticarcinogenic, anticonvulsant, analgesic, anti-diabetic, expectorant, hypoglycaemic, hypolipidemic, hypotensive.

Main Indications:

Depression & psychiatric illnesses, Alzheimer's & Parkinson's diseases, macular degeneration, PMS, cancer, cardiovascular disease, diabetes, metabolic syndrome, obesity, respiratory issues including asthma, neuropathic pain, osteoarthritis, Non-alcoholic fatty liver disease (NAFLD).

Historical Use & Research Summary

Saffron, the dried thread-like stamens from the flower of *Crocus sativus* L., has had a tradition of use spanning more than 3,600 years, as a spice, dye and medicine. Traditional Persian medicine used saffron to treat menstrual disorders, difficult labour, muscular spasms, mood disorders, pain, inflammation, vomiting, and diseases affecting the throat (Kashani, 2016; Sarris, 2013; Akhondzadeh, 2005). Egyptian healers used it to treat gastrointestinal ailments, and the Ancient Romans used it to promote wound healing and relieve upper respiratory complaints (Bisti, 2014). Today, it is being investigated extensively for its neuroprotective properties against neurodegenerative and neuropathic conditions, which appear to be largely mediated through its antioxidant and anti-inflammatory actions.

As one of the world's most expensive spices, Saffron can retail for up to US\$11,000 per kg due to the labour-intensive production process of hand-harvesting crocus flower stamens to produce the spice (Lopresti, 2014; Muszynska, 2015, Pitsikas, 2016). Fortunately, some research is now being undertaken on the petals as well as the stamens to ascertain therapeutic efficacy of this more economically-produced plant part.

Depression

Recent systematic reviews and meta-analyses of randomised clinical trials examining the efficacy of saffron on symptoms of major depressive disorder in adults, found 30mg/day (15mg twice daily) of *C. sativus* stigma or petal extract significantly reduced depressive symptoms

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Research Summary continued

Depression - continued

compared to placebo and was as effective as current antidepressant drug medications (Hausenblas, 2015 & 2013; Lopresti, 2014). A preliminary multi-centre clinical study also found 30mg/day saffron over 6 weeks to have comparable efficacy to fluoxetine 20mg/day in improving depressive symptoms of mild-to-moderate postpartum depression (Kashani, 2016). Possible improvement in SSRI-related sexual dysfunction in women has also been suggested from a clinical trial (Kashani, 2013). Additionally, constituents of Saffron have been found to have anxiolytic activity in animal studies investigating anxiety and obsessive-compulsive disorder, and may be a potential candidate in the treatment of schizophrenia (Pitsikas, 2015).

Mechanisms of these actions seem to be associated with Saffron's antioxidant, anti-inflammatory, serotonergic, HPA-axis modulating and neuroprotective effects, although most of this research is based on cell or animal studies (Lopresti, 2014). Saffron may also inhibit the reuptake of certain neurotransmitters, including dopamine, noradrenaline and serotonin, in a manner similar to antidepressant drugs (Hausenblas, 2015; Kashani, 2016).

Neurodegeneration

Saffron has traditionally been used in Persian traditional medicine for enhancing memory and cognition, and has demonstrated neuroprotective and anti-inflammatory properties in models of neurodegenerative disorders, including Alzheimer's Disease (AD) and Parkinson's Disease. Two recent trials demonstrated saffron was associated with significantly more improvement in mild-moderate AD symptoms than placebo, and was as efficacious as the current AD drug donepezil, though with fewer side effects (Modabbernia, 2013; Russo, 2013; Pitsikas, 2015). A 2014 trial in 68 patients with moderate-severe AD found 30mg/day of Saffron to be as effective as 20mg/day of the AD drug memantine in reducing cognitive deterioration (Farokhnia, 2014).

PMS

An 8 week trial in women with regular menstrual cycles who experienced PMS emotional, behavioural and physical symptoms found Saffron supplementation produced significant symptomatic improvement compared to placebo (Agha-Hosseini, 2008). Saffron has been shown to increase oestrogen levels in both the luteal and follicular phases of women's menstrual cycles, suggesting Saffron may modulate PMS by adjusting steroid hormone secretion (Fukui, 2010).

Eye health

Retinal neurodegenerative disease involves oxidative stress and inflammatory pathways, instigating apoptosis and retinal cell death which inevitably leads to irreversible damage and blindness. Extracts of Saffron have been used to delay retinal degeneration in animal studies of light-induced retinal damage, and in human trials of early-stage age related macular degeneration (AMD). Crocetin, crocin and safranal have been shown to prevent retinal degeneration by a number of mechanisms in cell and animal studies. These include preventing apoptotic death of retinal ganglion cells, protecting

retinal photoreceptors against light-induced cell death, preserving photoreceptor function and number, increasing blood flow in the retina and choroid to facilitate retinal function, preventing the loss of retinal blood vessels, improving capillary networks, and preserving capillary loops (Fernandez-Sanchez, 2015 & 2012).

Cancer protection

The anti-tumour and anti-carcinogenic activity of Saffron has been demonstrated via selective toxicity against cancer cells through a number of mechanisms including inhibition of RNA and DNA synthesis of malignant cells, inhibiting cell proliferation and inducing apoptosis, whilst also demonstrating a negligible level of toxicity towards healthy cells (Milajerdi, 2016). *In vitro* and *in vivo* studies have demonstrated anticancer activity against leukaemia, lung, skin, gastric, colorectal, prostate, breast and liver cancers (Zheng, 2016; Milarjerdi, 2016). Crocin, crocetin, and safranal have demonstrated anti-cancer activity, although crocin is considered to be the most important anti-cancer agent, particularly against gastrointestinal cancers (Milarjerdi, 2016).

References

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Suggested Combinations

Mood disorders & neurodegeneration

- 🍃 St John's Wort
- 🍃 Ginkgo
- 🍃 American ginseng

Eye health

- 🍃 Bilberry
- 🍃 Ginkgo

Cancer

- 🍃 Cats Claw
- 🍃 Baical skullcap