Oral supplementation with crocin (a constituent of saffron) in subjects with cigarette smoking: a clinical trial

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Abstract

Smoking is one of the main causes of death in the world. Cigarette use is related with various components of metabolic syndrome (e.g., insulin resistance, raised blood pressure, dyslipidemia, oxidative stress, inflammation state) and psychiatric disorders. This study was conducted to determine the effect of crocin (Cro) supplementation on nicotine dependence, anxiety, depression, and metabolic indices in smokers. A total of 50 smokers were selected and randomly categorized into two groups (crocin and placebo). The intervention group received crocin (30 mg per day; $n = 25$) and placebo (containing Avicel; $n = 25$) once a day. The primary (nicotine dependence, depression, and anxiety inventory) and secondary (metabolic indices) outcomes were assessed at the start of the intervention and after the 3 months. Multiple linear regression models were used to assess the treatment effects on the outcomes adjusting for confounding variables. The primary outcome results such as nicotine dependence, depression, and anxiety inventory did not have a significant difference among the intervention groups ($P > 0.05$). Also in the secondary outcomes, fasting plasma glucose

(FPG), insulin, and homeostasis model of assessment-insulin resistance (HOMA-IR) levels did indicate a significant difference by Cro intervention (β − 3.27 mg/dL; 95% CI, − 5.23, − 1.31; *P* = 0.002; *β* − 0.76 µIU/mL; 95% CI, − 1.38, − 0.15; *P* = 0.01; *β* − 0.18; 95% CI, − 0.29, − 0.07; *P* = 0.002), respectively. There were also significant reductions in serum levels of high-sensitivity C-reactive protein (hs-CRP) (β − 0.72 mg/L; 95% CI, − 1.37, − 0.07; *P* = 0.03), compared with the placebo. Cro intake may have favorable effects on the level of FPG, insulin, HOMA-IR, and hs-CRP in smokers. However, due to the small sample size and limited scientific reports on smokers, further studies are necessary. ClinicalTrial.gov Identifier: IRCT20170420033551N11

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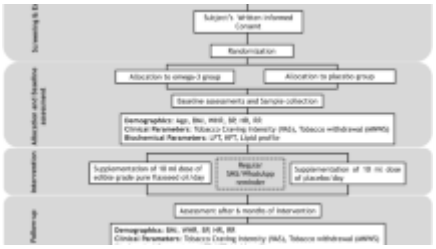

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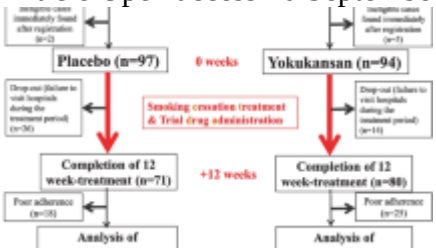

Randomized double-blind placebo-controlled multicenter trial for the effects of a polyherbal remedy, Yokukansan (YiganSan), in smokers with depressive tendencies

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Data availability

The data used and analyzed in this RCT are available on request from the corresponding authors.

Abbreviations

FPG :

Fasting plasma glucose

GSH :

Total glutathione

HOMA-IR :

Homeostasis model of assessment-insulin resistance

HDL-cholesterol :

High-density lipoprotein-cholesterol

Hs-CRP :

High-sensitivity C-reactive protein

LDL-cholesterol :

Low-density lipoprotein-cholesterol

NO :

Nitric oxide

VLDL-cholesterol :

Very low-density lipoprotein-cholesterol

TAC :

Total antioxidant capacity

MDA :

Malondialdehyde

BDI :

Beck Depression Inventory

BAI :

Beck Anxiety Inventory

NDSS :

Nicotine Dependence Syndrome Scale

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Download references

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Contributions

Mojtaba Mahdavi: Study design, conception, data collection, investigation, Methodology, and writing original draft preparation. Amir Ghaderi: Investigation, conceptualization, study design, methodology, supervision, project administration, resources, software, and manuscript drafting. Pooya Hazegh: Study design, conception, statistical analysis, and writing original draft preparation. Mohammad hassan Karimipour baseri: Investigation, methodology, data collection, and writing original draft preparation. Neda Vahed: Data collection, investigation, methodology, analysis and interpretation of data. Shekoofeh Nazemi: Data collection, study design, investigation, methodology, and manuscript drafting.

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Ethics declarations

Ethical approval and consent to participate

Ethical considerations were approved by the Kashan University of Medical Sciences research committee (ethical code: IR.KAUMS.REC.1400.048). The participants were educated about the purpose of the study, and participants gave their signed written informed consent letters. All protocol RCT were carried out in accordance with the Declaration of Helsinki.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.