Amelioration of anxiety, depression, and chemotherapy related toxicity after crocin administration during chemotherapy of breast cancer: a double blind, randomized clinical trial

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Introduction: The effects of saffron (Crocus sativus L.) on mood disorders have already been established. More recently, its anti-neoplastic effects have provoked a great attention. This study aims to assess the effects of crocin administration during doxorubicin-based chemotherapy of breast cancer (BC) on anxiety, depression, and chemotherapy toxicity profile.

Methods: 72 patients with non-metastatic Her2/neu positive or triple negative BC were enrolled and randomly assigned to receive either 30 mg/day of crocin or placebo during chemotherapy [2:2]. Beck's Depression and Anxiety Inventories were used at baseline and end of the trial. Also, the ECOG CTC were applied to assess side-effects.

Results: The degree of anxiety and depression decreased significantly in the crocin group (p=.001 for both) and increased significantly in the placebo-group (p=.006 and p=.036, respectively). There were significantly higher grade II-IV leukopenia (47.2% vs 19.4%, p=.012) in the crocin group, and grade II-IV hypersensitivity-reaction (30.6% vs. 5.6%, P=.006) in addition to neurological disorders (66.7% vs. 41.7%, p=.03) in the placebo-group.

Conclusion: The results of this study demonstrated that crocin administration during chemotherapy of breast cancer significantly decreased the degree of anxiety and depression compared to placebo. Besides, crocin co-administration can affect the chemotherapy side effects leading to significant increase of grade 2 leukopenia and significant decrease of grade 2 to 4 hypersensitivity reaction and neurological motor dysfunction. However, the frequencies of most side effects were equal in both groups. Also, the prevalence of complete pathological response was insignificantly more in the crocin group and a trend toward improved outcome was seen which we are going to investigate on longer follow up.