Ulcerative colitis: a phytomedical technical note

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Received: 26 June 2017 / Accepted: 4 September 2017 / Published online: 11 September 2017
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Technical note

Inflammatory bowel disease (IBD) consists of two similar but distinct diseases including ulcerative colitis (UC) and Crohn's disease (CD) (Hosseini et al. 2016). The etiology of UC is not clearly known and some different reasons such as immune system dysfunction, genetic susceptibility, changes in the gut flora, and environmental factors may be involved (Taghavi et al. 2016; Tanideh et al. 2017). Also, recently, the role of autophagy in UC was clarified (Lankarani et al. 2016). Despite the underlying causes, there are several different therapeutic strategies for UC including using 5-amino salicylic acid drugs (sulfasalazine, mesalazine, and asacole), immunosuppressive agents (corticosteroids, azathioprine, infliximab, and adalimumab), iron supplements, bacterial recolonization, surgical approaches, and alternative treatments. In this regard, use of medicinal plants and their derivatives such as essential oil, alcoholic, aqueous, and hydroalcoholic extracts has obtained more attention by scientists. I and my colleagues published several studies on the in vivo effects of some medicinal plants such as *Satureja khuzestanica* (Hafezi et al. 2015), *Berberis vulgaris* (Karami et al. 2016), and *Galega officinalis* and *Trigonella foenum-graecum* (Shojaee et al. 2015) in dia-

betes mellitus, *Zizyphus jujuba* (Koochi-Hosseiniabadi et al. 2015a), *Carum carvi* (Mardani et al. 2016), *Olea europaea* (Showraki et al. 2016), and other species (Sepehrimanesh 2016) in oral mucositis, *Satureja khuzestanica* (Assaei et al. 2015) and *Pistacia atlantica* (Nazifi et al. 2012) in thyroid dysfunction, *Thymus vulgaris* (Koochi-Hosseiniabadi et al. 2015b) in hyperlipidemia, *Berberis vulgaris* (Yazdani et al. 2013) on intestinal morphology plus in vitro antimicrobial activity of *Scutellaria luteo-caerulea* (Nikbin et al. 2014a) and *Calotropis procera* (Kazempour et al. 2014a), antihelminthic effect of *Peganum harmala* (Roozitalab et al. 2017) and antioxidant properties of *Scutellaria luteo-caerulea* (Kazempour et al. 2014b), *Calotropis procera* (Kazempour et al. 2015) and *Mentha piperita* (Najafian et al. 2016) and *Stevia rebaudiana* (Najafian et al. 2016). Now, we know that these effects are due to mineral elements, phenolic compounds, or other active substances (Kazempour et al. 2015; Najafian et al. 2016; Nikbin et al. 2014b).

Specifically about UC, I and my colleagues reported the beneficial effects of certain plant species in experimental induced UC in rat as an animal model for human studies. For instance, the aqueous extract of *Melilotus officinalis* (yellow sweet clover) could decrease pathologic lesions and malondialdehyde (MDA) content and improve weight gain in 3% acetic acid-induced ulcerative colitis in rat. This may be due to its active substances such as cinnamic acid, coumarin, p-coumaric acid, catechin, caffeic acid, gallic acid, quercetin, and chlorogenic acid and also its high ferric reducing antioxidant power (Safarpour et al. 2015). The hydroalcoholic extract of *Calendula officinalis* (marigold) in both oral and enema application also significantly increased weight gain, resolved acute inflammation and granular atrophy, increased myeloperoxidase activity, and decreased MDA level after UC

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induction (Tanideh et al. 2016). In another study, *Hypericum perforatum* (perforate St John's-wort) extract in the two forms of trans-rectal and oral administration could result in a more healing effect on acetic acid-induced damaged colonic tissue with a reduction in the MDA level (Tanideh et al. 2014). Finally, grapeseed oil in combination with sesame oil had clear effects on daily weight changes, serum levels of oxidative stress markers, and lipid profile plus colon macroscopic and microscopic histological changes in rat model of UC (Hosseinzadeh et al. 2016).

One of the possible mechanisms of UC is oxidative stress which is induced by reactive oxygen species and/or nitrogen reactive species. Peroxidation of lipid can also induce oxidative stress. Another mechanism is involvement of microflora and other gut microbiota in pathogenesis of UC. It can be concluded that certain plants, such as what I reported here, exhibited antioxidant properties and also contain some antimicrobial agents. These agents combat with both free radicals and bacterial overgrowth and diminish the UC-related pathological lesion. Purification of these active substances can be attractive for pharmacologists and also can help physicians to apply these plants or in higher degree the partially purified products as alternative therapies for patients with UC. On the other hand, our findings are in animal models and I invited young and famous researchers to organize randomized clinical trial studies in human to help patients in overcoming this life-disrupting disease.

Acknowledgements The authors wish to thank all members of the research team who helped in the previous studies.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval No animal or human was enrolled in this study and therefore, no ethical approval is needed.

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