
Hypertension is a common public health concern and a significant risk factor for metabolic syndrome and a complexity of other diseases; these include diabetes, hyperlipidemia, myocardial infarction, heart failure, stroke, peripheral vascular diseases, and chronic kidney diseases. Common treatments include drug therapies, lifestyle changes, dietary supplements, reduced sodium intake, and exercise. Many drug therapies have unwanted side effects, which has led to an increased interest in nutritional and herbal interventions. *Berberis* (*Berberis* spp., *Berberidaceae*) fruit has been used in food, teas, drinks, syrups, candies, and pastries. Traditional and folk medicine describes using the roots, bark, leaves, and fruits as prophylactic and therapeutic treatments for cardiovascular disease. *Berberis* fruits contains polyphenolics compounds and has been shown to have antioxidant, anti-inflammatory, hypoglycemic, hypotensive, hypolipidemic, anticarcinogenic, anti-histaminic, anti-arrhythmic, and sedative properties. The purpose of this systemic review and meta-analysis was to determine the effects of barberry (*B. vulgaris*) supplementation on blood pressure.

Preferred reporting items for systematic reviews and meta-analysis (PRISMA) guidelines were followed. A keyword search was performed using Scopus, PubMed, Google Scholar, Cochran, Embase, and Web of Science databases through May 1, 2020. Additionally, the lists of references were reviewed to include other possible sources. Randomized controlled trials investigating barberry supplementation on blood pressure with trials lasting more than four weeks and conducted with patients over the age of 18 years were included. Articles were excluded that used animal or laboratory tests, were conducted with pregnant women, without a suitable control group, similar, duplicate, or insufficient data, and studies that used barberry in combination with other supplements. Additionally, conferences and case reports were also excluded. Bias was analyzed using Cochran form criteria.
A total of 860 articles were identified for the review; of those, 182 were duplicates. The remaining 678 were screened using title and abstract; 623 were excluded for not meeting inclusion criteria. Fifty-five full-text articles were assessed for eligibility. Fifty were removed for insufficient data (n = 40), lack of placebo group (n = 2), duplicate data (n = 2), and barberry used in combination with other components (n = 6). Five studies were included in this systematic review and meta-analysis. All included articles were published between 2009 and 2020 and included a parallel design using patients of both genders from Iran. The included studies had a pooled sample size of 350 patients with 175 patients in the intervention groups and 175 in the control. The trials ranged from four to 12 weeks with a dose between 200 mg and 5000 mg. Included patients were diagnosed with type 2 diabetes, metabolic syndrome, and non-alcohol fatty liver.

According to Cochrane collaboration's risk of bias assessment took, three trials had a low or unclear risk regarding blinding, and two had a high risk. All studies showed an unclear risk of bias for blinding of outcome assessment and selective reporting. Four showed a low risk and one unclear based on incomplete outcome data. Regarding allocation concealment, three studies had a low risk and two had unclear risk of bias.

Pooled sample size did not show a significant effect of barberry supplementation on systolic blood pressure (SBP) or diastolic blood pressure (DBC). However, in both instances, significant heterogeneity was observed (P = 0.002, P = 0.001, respectively). Subgroup analysis according to duration, age, and dose did not improve inter-study heterogeneity for either SBP of DBP. In both instances, a longer duration of barberry supplementation was more effective than a shorter duration; however, the results were only significant for SBP (P = 0.001).

No evidence of publication bias was found for SBP or DBP. Sensitivity analysis showed that exclusion of any single study did not alter the overall effect.

Several limitations to existing evidence on barberry's efficacy are noted and must be considered. The effect of barberry consumption on blood pressure may be influenced by geographical parameters of the studies. Diet, exercise, psychological factors, and changes in type and dose of medication may have affected blood pressure. The included studies used patients diagnosed with different health conditions. From this study, the authors conclude that there is insufficient evidence to conclusively state whether barberry supplementation has an effect on blood pressure. The authors recommend further studies are needed to determine the efficacy of barberry on blood pressure.

The authors declare no conflict of interest.

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