Gastroenterology

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Article in Press

Efficacy and Safety of Peppermint Oil in a Randomized Double-blind Trial of Patients With Irritable Bowel Syndrome

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DOI: https://doi.org/10.1053/j.gastro.2019.08.026

Abstract

Abstract

Background & Aims

Peppermint oil is frequently used to treat irritable bowel syndrome (IBS), despite a lack of evidence for efficacy from high-quality controlled trials. We studied the efficacy and safety of small intestinal-release peppermint oil in patients with IBS and explored the effects of targeted ileocolonic-release peppermint oil.

Methods

We performed a double-blind trial of 190 patients with IBS (according to Rome IV criteria) at 4 hospitals in the Netherlands, from August 2016 through March 2018; 189 patients were included in the intent to treat analysis (mean age, 34.0 years; 77.8% female; 57.7% in primary care); 178 completed the study. Patients were randomly assigned to groups given 182 mg small intestinal-release peppermint oil, 182 mg ileocolonic-release peppermint oil, or placebo for 8 weeks. The primary endpoint was abdominal pain response, as defined by the Food and Drug Administration: at least a 30% decrease in the weekly average of worst daily abdominal pain compared to baseline in at least 4 weeks. The co-primary endpoint was overall relief of IBS symptoms, as defined by the European Medicines Agency. Secondary endpoints included abdominal pain, discomfort, symptom severity, and adverse events.

Results

Abdominal pain response did not differ significantly between peppermint oil and placebo groups: 29/62 patients in the small intestinal-release peppermint oil group had a response (46.8%, *P*=.170 vs placebo), 26/63 patients in the ileocolonic-release peppermint oil group had a response (41.3%, *P*=.385 vs placebo), and 22/64 patients in the placebo group had a response (34.4%). We did not find differences among groups in overall relief (9.7%, *P*=.317 and 1.6%, *P*=.351 vs 4.7% for placebo). The small intestinal peppermint oil did, however, produce greater improvements than placebo in secondary outcomes of abdominal pain (*P*=.016), discomfort (*P*=.020), and IBS severity (*P*=.020). Adverse events, although mild, were more common in both peppermint oil groups (*P*<.005).

Conclusions

In a randomized trial of patients with IBS, we found that neither small-intestinal-release nor ileocolonic-release peppermint oil (8 weeks) produced statistically significant reductions in abdominal pain response or overall symptom relief, when using FDA/EMA recommended endpoints. The small intestinal-release peppermint oil did, however, significantly reduce abdominal pain, discomfort, and IBS severity. These findings do not support further development of ileocolonic release peppermint oil for treatment of IBS. Clinicaltrials.gov no: NCT02716285

Key Words:
functional gastrointestinal disorder, PERSUADE study, RCT, treatment

Abbreviations:
AE (adverse event), BSFS (Bristol Stool Form Scale), CI (Confidence Interval), eCRF (electronic case report file), EMA (European Medicines Agency), FDA (Food and drug administration), GAD-7 (Generalized Anxiety Disorder-7), GERD (Gastroesophageal reflux disease), GI (Gastrointestinal), IBS-QoL (Irritable Bowel Syndrome Quality of Life), IBS-SSS (Irritable bowel syndrome symptom severity scoring system), IBS (irritable bowel syndrome), ITT (intention-to-treat), MUMC+ (Maastricht University Medical Center), NNH (number needed to harm), NNT (number needed to treat), NRS (numerical rating scale), NSAID (Non-steroidal anti-inflammatory drug), OR (Odds Ratio), OTC (over-the-counter), PHQ-9 (Patient Health Questionnaire-9), PP (per protocol), PPI (Proton pump inhibitor), TRP (Transient receptor potential)

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GRANT SUPPORT

Funding for this study was provided by a grant received from ZonMw, The Netherlands Organisation for Health Research and Development (Dutch governmental), grant number 836031017. The study was initiated by the academic authors in collaboration with WillPharma S.A., Wavre, Belgium. The independent ZonMw subsidizing committee, advised by external referees, had input in the study design. The peppermint oil capsules for this study have been provided in kind by Will Pharma S.A., Wavre, Belgium. In addition, Will Pharma S.A. provided funding for the execution of the phase I study[1], the execution of which was a prerequisite for receiving funding for the current study from ZonMw. The study design, data collection, analysis and interpretation were done by the academic authors without industry involvement. The decision to submit was made by the academic authors with no restrictions imposed by the sponsor. WillPharma S.A., was provided the possibility to review the manuscript prior to publication but the content of the manuscript was at the sole discretion of the academic authors.

DISCLOSURES / CONFLICT OF INTEREST

A.A.M.M. and D.K. have received a ZonMw, The Netherlands Organisation for Health Research and Development (Dutch governmental), health care efficiency grant for the execution of this study. A.A.M.M. and D.K. have received an unrestricted research grant from Will Pharma S.A., which also supported Z.Z.R.M.W. to attend a scientific meeting. A.A.M.M. and D.K. have received research funding from Allergan and Grünenthal (both unrelated to current study). A.A.M.M. has given scientific advice to Bayer and Kyowa Kirin and has received funding from Pentax Europe GmBH. D.K. has given scientific advice to Biocodex and Bayer. The employer of D.K. and A.A.M.M. has an agreement with Will Pharma S.A. regarding the exploitation of a potential market authorization of the ileocolonic formulation of peppermint oil for IBS. J.R.B.J.B. has received a consultancy fee from Will Pharma S.A. The employer of H.W.F. has a license agreement with Will Pharma S.A., regarding the ColoPulse technology. J.T. has given scientific advice to AlfaWassermann, Allergan, Christian Hansen, Danone, Grünenthal, Ironwood, Janssen, Kyowa Kirin, Menarini, Mylan, Neutec, Novartis, Noventure, Nutricia, Shionogi, Shire, Takeda, Theravance, Tramedico, Tsumura, Zealand, and Zeria pharmaceuticals and has served on the Speaker bureau for Abbott, Allergan, AstraZeneca, Janssen, Kyowa Kirin, Menarini, Mylan, Novartis, Shire, Takeda, and Zeria. A.S.R.P. has received financial support from Allergan to attend a scientific meeting. B.J.M.W., C.H.M.C., B.W., J.W.M.M., N.J.d.W., B.A.B.E., J.W.T.S, A.M.H.B., and D.M.A.E.J. do not have any conflict of interest to declare.

AUTHOR CONTRIBUTIONS

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A.A.M. Masclee Study concept and design, obtained funding, data interpretation, constructive review of manuscript

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C.H.M Clemens Study concept and design, constructive review of manuscript

J.R.B.J. Brouwers Study concept and design, constructive review of manuscript

H.W. Frijlink Study concept and design, constructive review of manuscript

B. Winkens Data analysis, constructive review of manuscript

J.W.M. Muris Study concept and design, constructive review of manuscript

N.J. De Wit Study concept and design, constructive review of manuscript

B.A.B. Essers Study concept and design, constructive review of manuscript

J. Tack Study concept and design, constructive review of manuscript

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D. Keszthelyi Study concept and design, obtained funding, data interpretation, constructive review of manuscript.

All authors approved the final manuscript.

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