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LETTER TO THE EDITOR

Herbal formulas and gastrointestinal motility: Bridging traditional medicine and mechanistic insights

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Abstract

Wang *et al* provide preclinical evidence that specific traditional herbal formulas, like Pyeongwi-san, can improve gastrointestinal (GI) motility under stress. Pyeongwi-san enhances GI transit, boosts serotonin levels, restores short-chain fatty acid balance, and reduces inflammation. The clinical significance of this research is its potential for standardized herbal remedies for GI disorders, such as dyspepsia and irritable bowel syndrome. At the same time, using only male mice, a single dose regimen, and relatively small cohorts highlights the need for further validation, including sex-specific responses, dose-effect relationships, and translational clinical studies. In summary, readers will find value in this article because it provides mechanistic details, bridges tradition with modern science, deals transparently with its limitations, and paves the way for clinically relevant innovation in GI health. Future investigations should focus on clinical validation and personalized therapeutic strategies that harness both microbiome-gut-brain interactions and the long history of herbal medicine.

Key Words: Gastrointestinal motility; Cold stress-induced dyspepsia; Traditional herbal formulas; Mouse model; Comparative evaluation; Digestive function; Phytotherapy

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Core Tip: Functional gastrointestinal disorders such as dyspepsia encompass complex pathophysiological mechanisms for which safe and effective treatments remain limited. This research provides new evidence that traditional herbal formulas can ameliorate cold stress induced impairment of gastrointestinal motility in a mouse model, offering mechanistic insight into their therapeutic potential. Additionally, this research demonstrates that standard methods could link traditional herbal practices with modern treatments. Further translational research is needed to monitor the impact of these methods on patients suffering from functional dyspepsia.

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TO THE EDITOR

We are delighted to read the paper published in the *World Journal of Gastroenterology* by Wang *et al*[1] exploring how traditional herbal formulas, especially Pyeongwi-san (PS), can restore gastrointestinal (GI) motility in a cold stress induced dyspepsia mouse model through mechanisms involving serotonin, microbiota metabolites, and bile acid signaling. These findings bridge ethnopharmacology with modern science and highlight the need for translational studies to validate their therapeutic potential in functional GI disorders.

STUDY EVALUATION

The modern resurgence of traditional medicine has renewed the search for evidence-based efficacy of centuries-old-remedies. Wang *et al*[1] provide a critical preclinical evaluation of three classical herbal formulas: PS, Shihosogan-tang, and Yijung-tang, for GI motility in a cold stress-induced dyspepsia mouse model. The author considers this model significant because cold restraint stress disrupts autonomic regulation and causes functional impairments similar to dyspepsia in humans[2]. Using this experimental design, the authors ensured that their findings could be interpreted against established physiological stress-gut pathways.

Among the formulas studied, PS showed the strongest efficacy by improving gastric emptying and intestinal transit, enhancing gastric acid output, and upregulating digestive enzyme expression. Notably, its effects on serotonin secretion and glucagon-like peptide-1 signaling add credibility, as both serotonergic activity and glucagon-like peptide-1 mediate fundamental aspects of gut motility and central gut-brain communication[3,4]. These data support the hypothesis that PS acts by restoring both neuromodulator and mucosal factors disrupted during stress-related dyspepsia.

The authors also provide convincing mechanistic insight into how PS regulates gut microbial metabolites, particularly short chain fatty acids, and influences bile acid receptor pathways. This phytotherapy and intestinal microbiota link is vital, as microbial metabolism is now considered as a driver of gut-brain interactions and systemic inflammation in GI disorders[5]. The study bridges traditional formulas and molecular gastroenterology by mapping herbal effects to specific host-microbiota signaling interactions.

Despite these strengths, there are also some limitations. The use of only male mice leaves questions of sex-specific influences, which are known to significantly affect both microbiota composition and stress responsiveness[6]. Moreover, the reliance on a single dosing regimen and small cohorts may limit the interpretability of dose-response effects and longer-term safety. Translational differences in microbiome structure between mice and humans may also affect reproducibility, a limitation previously highlighted in microbiota research[7].

The findings are significant for those with functional dyspepsia and irritable bowel syndrome, as traditional treatments often do not work well. By showing that PS can modulate inflammatory and neuroendocrine regulators of motility, the study aligns with a broader call for evidence-based standardization of herbal medicines that could be safely integrated into mainstream practice[8].

Future studies should refer explicitly to both preclinical animal experiments and clinical trials in humans, as investigating sex and other host factors is essential at both levels to fully elucidate the therapeutic effects, and underlying mechanisms of herbal formulas in GI disorders. This comprehensive approach will enable robust mechanistic and translational evidence required for their safe integration into clinical practice. Multiomics approaches, particularly metabolomics, could provide a deeper profile of how PS alters systemic pathways and helps predict patient-specific response patterns[9]. Such integrative approaches may shape the development of precision phytotherapy for GI disorders.

CONCLUSION

In summary, Wang *et al*[1] provide compelling preclinical evidence that PS enhances gut motility through neuroendocrine and microbiota-related pathways, although robust clinical validation remains essential before translation into

practice.

FOOTNOTES

Author contributions: Zalzman M reviewed and edited the manuscript; Banerjee A conceptualized the work, wrote the original draft, and completed the final draft before the first author read and approved the final version. All authors have read and approved the final manuscript.

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