

Rapid health technology assessment of tegoprazan in the treatment of acid-related diseases

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Systematic Review

Keywords: tegoprazan, acid-related diseases, efficacy, safety, economics, rapid health technology assessment

Posted Date: July 30th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10224692/v1>

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Additional Declarations: No competing interests reported.

Abstract

Objectives

To evaluate the efficacy, safety, and cost-effectiveness of tegoprazan in the treatment of acid-related diseases and to provide evidence-based support for clinical rational drug use.

Methods

PubMed, Embase, Web of Science, Cochrane Library, CNKI, Wanfang Data, VIP and official websites of foreign health technology assessment institutions were systematically searched from inception to December 2025. Two reviewers independently screened, extracted, and assessed the quality of included studies according to the inclusion and exclusion criteria, and performed qualitative description and analysis.

Results

A total of 10 studies were included, comprising 9 systematic reviews/meta-analyses and 1 pharmacoeconomic study. In terms of efficacy, tegoprazan and proton pump inhibitors (PPIs) demonstrated similar efficacy and good compliance in the treatment of erosive esophagitis and *Helicobacter pylori* infection. Subgroup analyses showed higher eradication rates in studies conducted in China, those with treatment durations of 10 or 14 days, those using dual or bismuth quadruple regimens, and in patients with clarithromycin-resistant strains. In terms of safety, both tegoprazan and PPIs exhibited comparable safety profiles. Tegoprazan was associated with a significantly lower incidence of adverse effects such as abdominal pain, abdominal bloating, diarrhea, headache, and taste disorders compared to PPIs, while it increased the risk of liver function abnormalities. Regarding cost-effectiveness, compared with vonoprazan and PPIs, tegoprazan was more effective in the treatment of *Helicobacter pylori* infection.

Conclusions

Tegoprazan demonstrates non-inferiority to PPIs for acid-related diseases, lowering common PPI-related adverse events but requiring monitoring for hepatobiliary risks. Its strong cost-effectiveness supports it as a viable treatment alternative.

1. Introduction

Digestive system diseases encompass a diverse group of disorders affecting the structure and function of the gastrointestinal tract. They not only interfere with the normal digestion and absorption of nutrients but may also exert broad effects on overall health through chronic inflammation, mucosal damage, or functional disturbances ^[1]. Given their potentially progressive nature, early diagnosis and standardized treatment are critical measures to alleviate gastrointestinal symptoms and serve as core strategies to prevent disease progression to severe complications. Acid-related diseases (ARDs) are common digestive system disorders caused by excessive gastric acid secretion or abnormal acid-related mechanisms, involving multiple organs such as the esophagus, stomach, and duodenum. These primarily include gastroesophageal reflux disease (GERD), peptic ulcer (PU), and *Helicobacter pylori* (*H. pylori*) infection ^[2]. In recent years, the incidence of ARDs has been steadily increasing, making them a significant public health issue that threatens human health and imposes an economic burden ^[3]. Currently, the treatment strategy for ARDs remains centered on acid suppression. Although proton pump inhibitors (PPIs), as first-line therapy for ARDs, have demonstrated clear efficacy, their therapeutic limitations cannot be overlooked, including unstable acid suppression, slow onset of action, significant variability in efficacy, and nocturnal acid reflux ^[4–5].

In recent years, the development of potassium-competitive acid blockers (P-CABs) has provided new therapeutic options for acid-related diseases (ARDs). P-CABs exert acid-suppressing effects by reversibly binding to the potassium-binding site of H^+/K^+ -ATPase, thereby inhibiting both resting and activated H^+/K^+ -ATPase in parietal cells. Additionally, these drugs can remain in the secretory canaliculi at the apical region of parietal cells for a prolonged period, continuously blocking newly synthesized proton pumps and thus achieving sustained inhibition of gastric acid secretion ^[6,7]. Tegoprazan (TPZ), the first independently developed P-CAB in China, does not require activation in an acidic environment and exhibits a rapid onset of action, providing more stable and long-lasting acid suppression. Moreover, its pharmacokinetic profile is not influenced by CYP2C19 gene polymorphisms ^[8]. Although TPZ has been included in the national medical insurance catalog, its reimbursement price remains higher than that of most proton pump inhibitors (PPIs), thereby increasing patients' medication costs. Currently, domestic research on TPZ is limited, and comprehensive, systematic evidence is lacking, highlighting the need for further thorough evaluations of its efficacy, cost-effectiveness, and safety.

Rapid health technology assessment (rHTA) is an evidence synthesis method that systematically integrates existing evidence. By streamlining processes and focusing on key issues, it enables rapid evaluation of the efficacy, safety, and cost-effectiveness of drugs, thereby providing scientific information and evidence-based support for decision-making by health policymakers ^[9]. This study aims to apply the rHTA method to

evaluate the efficacy, cost-effectiveness, and safety of TPZ in the treatment of ARDs, with the goal of providing a basis for rational clinical drug use and healthcare insurance decision-making.

2. Methods

2.1. Inclusion and Exclusion Criteria

2.1.1. Study Subjects

The study enrolled patients with acid-related diseases (ARDs), including GERD, PU, H. pylori infection, erosive esophagitis (EE), and gastric and duodenal ulcers, with no restrictions on age or gender.

2.1.2. Intervention Measures

Patients in the experimental group received TPZ as monotherapy or combination therapy, while those in the control group received placebo, monotherapy with other positive control drugs, or combination therapy, with no restrictions on dosage or treatment duration.

2.1.3. Outcome Measures

The outcome measures of this study included: (1) efficacy indicators: healing rate, Helicobacter pylori (H. pylori) eradication rate, and treatment adherence; (2) safety indicators: the incidence of adverse reactions; and (3) cost-effectiveness indicators: incremental cost-effectiveness ratio (ICER) and incremental cost-utility ratio (ICUR).

2.1.4. Study Type

The literature included in this study consisted of health technology assessment (HTA) reports, systematic reviews/meta-analyses, and pharmacoeconomic studies. No language restrictions were applied.

2.1.5. Exclusion Criteria

The exclusion criteria of this study were as follows: (1) literature with inaccessible full text; (2) literature with unextractable relevant data; (3) conference reports, case reports, and review articles; (4) duplicate publications; and (5) literature in which the study subjects could not be distinguished.

2.2. literature retrieval strategy

Searches were conducted in PubMed, Embase, Web of Science, Cochrane Library, CNKI (China National Knowledge Infrastructure), Wanfang Data, VIP (Chinese Sci-Tech Journal Database), as well as the websites of the following international health technology assessment agencies: the International Network of Agencies for Health Technology Assessment (INAHTA, <http://www.inahta.org>), the National Institute for Health and Care Excellence (NICE, <http://www.nice.org.uk>), the Agency for Healthcare Research and Quality (AHRQ, <http://www.ahrq.gov>), the Australian Institute of Health and Welfare (AIHW, <http://www.aihw.gov.au>), and the Canadian Agency for Drugs and Technologies in Health (CADTH, <http://www.cadth.ca>). The Chinese search phrase was: "tegoprazan AND (meta-analysis OR meta OR cost OR cost-effectiveness OR efficacy OR safety)"; the English search phrase was: "(tegoprazan OR TPZ) AND (meta OR systematic review OR cost OR economic)". The search time frame was from database inception to December 2025. Additionally, the reference lists of the included studies were manually searched.

2.3. Literature Screening and Data Extraction

Two researchers independently screened the literature according to the inclusion and exclusion criteria. In the event of disagreement, discussions were conducted with a third researcher. The extracted information included first author, publication date, target population, sample size, intervention measures, and outcome indicators.

2.4. Literature quality assessment

The quality of HTA reports was assessed using the HTA checklist developed by the International Network of Agencies for Health Technology Assessment (INAHTA), which comprises 14 items. Each item was rated as "yes," "partially yes," or "no" based on compliance, and the total score was calculated accordingly. The quality was classified as high (10–14 points), medium (6–9 points), or low (0–5 points) ^[10].

The AMSTAR 2 tool was used to assess the quality of systematic reviews and meta-analyses. This scale consists of 16 items, among which items 2, 4, 7, 9, 11, 13, and 15 are considered critical. Ratings are assigned as 'Yes', 'Partial Yes', or 'No' based on the fulfillment of criteria. According to the extent of item compliance, the quality of each study was classified into four levels: high quality (no non-compliance or only one non-critical item non-compliant), moderate quality (more than one non-critical item non-compliant), low quality (one critical item non-compliant), and very low quality (more than one critical item non-compliant) ^[11].

The CHEERS 2022 checklist is used to evaluate the quality of pharmacoeconomic studies and consists of 28 items. Each item is rated as "excellent," "good," "moderate," or "poor" based on the extent to which the study meets the specified criteria. According to the overall item compliance rate, the quality of economic studies is classified into four levels: excellent (100% compliance), good (75%–99% compliance), moderate (50%–74% compliance), and poor (less than 50% compliance) [12].

2.5. Data analysis

The study results were analyzed using qualitative methods. The data obtained were expressed as relative risks (RR), odds ratios (OR), and 95% confidence intervals (CI).

3. Results

3.1. Literature search results

A total of 210 articles were initially screened. After reviewing the titles, abstracts, and full texts, 10 articles were ultimately included [8,13–21]. Among these, nine were systematic reviews or meta-analyses [8,13–20], one was a pharmacoeconomic study [21], and no health technology assessment (HTA) reports were retrieved. The literature screening process is shown in Fig. 1.

3.2. Basic Characteristics of Included Literature and Quality Evaluation Results

3.2.1. SR/Meta-analysis

Among the 9 included systematic reviews/meta-analyses, 5 focused on Hp infection [13–16,18], 3 on EE [8,17,19], and 1 on GERD [20]. The quality assessment revealed that 6 studies were of moderate quality [8,14–17,20], 2 were of high quality [13,19], and 1 was of very low quality [18]. The results are presented in Table 1.

Table 1
Basic characteristics and quality assessment results of included SR/Meta analyses

study	Inclusion of study types	Study population	Number of studies included	Total cases	Comparison group	Control group	validity index	safety indicator	quality grade
Hussaini 2025 ^[8]	RCT	EE	4	963	TPZ 25mg, 50mg	PPI(LPZ 15mg, 30mg/ESO 40mg)	☐	☐	Moderate
Purja 2025 ^[13]	RCT, retrospective study	Hp infect	9	5228	TPZ 50mg	PPI(LPZ 30mg/RAB 20mg/ESO 20mg, 40mg)	☐☐☐☐	☐	High
Cho 2025 ^[14]	RCT, retrospective study	Hp infect	7	3200	TPZ 50mg	PPI(LPZ 30mg/RAB 20mg/ESO 20mg, 40mg)	☐	☐	Moderate
Zhang 2025 ^[15]	RCT, retrospective study	Hp infect	8	4640	TPZ 50mg	PPI(LPZ☐RAB☐ ESO)	☐☐	☐	Moderate
Simadibrata 2025 ^[16]	RCT	Hp infect	6	2110	TPZ 50mg	PPI(LPZ 30mg/ESO 20mg, 40mg)	☐☐☐☐☐	☐	Moderate
Nayyer 2025 ^[17]	RCT	EE	3	658	TPZ 50mg	PPI(LPZ 30mg/ESO 40mg)	☐	☐	Moderate
Kanu 2024 ^[18]	RCT, observational study	Hp infect	4	1619	TPZ 50mg	PPI(LPZ 30mg/RAB 20mg)	☐	-	Very low
Bhatti 2025 ^[19]	RCT	EE	3	766	TPZ 50mg☐ 100mg	PPI(ESO 40mg/LPZ 30mg)	☐	☐	High
Lu Ronghua 2025 ^[20]	RCT	GERD	7	1329	TPZ 25☐ 50mg	PPI(ESO 40mg/LPZ 30mg/OMP 20mg)	☐	☐	Moderate

RCT: Randomized Controlled Trial; LPZ: Lansoprazole; ESO: Esomeprazole; RAB: Rabeprazole; OMP: Omeprazole; ☐: Healing rate; ☐: Hp eradication rate; ☐: Clarithromycin-resistant Hp eradication rate; ☐: Amoxicillin-resistant Hp eradication rate; ☐: Metronidazole-resistant Hp eradication rate; ☐: Treatment adherence; ☐: Adverse reaction incidence.

3.2.2. Pharmacoeconomic Evaluation

The one included pharmacoeconomic evaluation focused on Hp infection [21] and was assessed as being of good quality. The results are presented in Table 2.

Table 2 Basic characteristics and quality assessment results of included pharmacoeconomic evaluations										
Study	country	Research perspective	economic model	research technique	Evaluation methodology	Study population	Comparison group	Control group	Time-frame	CHEERS 2022 Quality Level
Zhao Mengrui 2025[21]	China	Health system	markov model	cost-benefit analysis	ICUR	Hp infect	TPZ	ESO/VPZ	The patient is alive.	good

QALYs: Quality-Adjusted Life Years; ESO: Esomeprazole; VPZ: Venlafaxine.

3.3. Efficacy Evaluation

3.3.1. Healing Rate

Four studies reported no statistically significant difference in healing rates between TPZ and PPI at weeks 4 and 8 ($P > 0.05$) [8,17,19,20]. One study found no statistically significant difference in healing rates between TPZ and PPI during the 4- to 8-week observation period ($RR = 1.03$, 95% CI: 0.97–1.10, $P = 0.29$) [17]. Another study reported no significant difference between the two dose groups: 50 mg ($RR = 1.03$, 95% CI: 0.98–1.08, $P = 0.24$) and 100 mg ($RR = 1.03$, 95% CI: 0.97–1.09, $P = 0.30$) [19]. These results indicate that neither treatment duration nor dosage level significantly affects the relative efficacy of TPZ and PPI in treating EE, with both drugs demonstrating comparable healing outcomes at both time points and across both dose levels.

3.3.2. Eradication Rate of Hp

Five studies [13–16,18] reported the eradication rates of *H. pylori*. The results showed that in both the intention-to-treat (ITT) [13–16,18] and per-protocol (PP) [13,14,18] analyses, the eradication rates in the TPZ group were higher than those in the PPI group, but the differences were not statistically significant ($P > 0.05$).

One study [15] conducted subgroup analyses of eradication rates based on geographical distribution, treatment duration, and treatment regimen. Regarding geographical distribution, the eradication rate of *H. pylori* in China was significantly higher than that in South Korea (85.3% vs. 76.2%, $P < 0.001$). Regarding treatment duration, the eradication rates after 10 and 14 days of treatment were significantly higher than those after 7 days (76.1% vs. 61.7%, $P < 0.001$; 81.0% vs. 61.7%, $P < 0.001$), and the 14-day regimen was significantly more effective than the 10-day regimen (81.0% vs. 76.1%, $P < 0.001$). In the treatment regimen analysis, a total of 475, 1,881, and 297 patients received dual therapy, triple therapy, and bismuth quadruple therapy, respectively, with *H. pylori* eradication rates of 85.3%, 75.2%, and 86.5%. Compared with triple therapy, dual therapy and bismuth quadruple therapy achieved significantly higher eradication rates ($P < 0.001$).

A study reported the use of TPZ as second-line eradication therapy after first-line treatment failure. The results showed that in the ITT analysis, the eradication rate of TPZ versus PPI was 87.10% vs. 84.0% ($OR = 1.261$, 95% CI: 0.498–3.193); in the PP analysis, the eradication rate of TPZ versus PPI was 94.70% vs. 93.26% ($OR = 0.976$, 95% CI: 0.277–3.445). The differences were not statistically significant ($P > 0.05$) [13].

Two studies [13,16] reported the eradication rates of TPZ against antibiotic-sensitive or -resistant *H. pylori*. One study [13] included three randomized controlled trials (RCTs) and a retrospective study, involving a total of 1,199 patients. The results showed that in *H. pylori* infections confirmed by 23S rRNA sequencing to be resistant to clarithromycin, TPZ had a higher eradication rate compared with proton pump inhibitors (PPIs) ($OR = 4.961$, 95% CI: 1.024–24.030, $P = 0.047$). Another study [16] included one RCT involving 350 patients (resistant to clarithromycin and amoxicillin) and 211 patients (resistant to metronidazole). The results indicated that for *H. pylori* patients resistant to clarithromycin, amoxicillin, and metronidazole, there was no statistically significant difference in eradication rates between TPZ and PPIs ($P > 0.05$).

3.3.3. Treatment Compliance

The results of two studies demonstrated that both TPZ and PPI had high compliance rates in first-line and second-line treatments, with no statistically significant difference between the two groups ($P > 0.05$) [13,15].

3.4. Safety Evaluation

3.4.1. Overall Adverse Reaction Incidence

Six studies demonstrated that the incidence of total adverse events was comparable between the TPZ and PPI groups, with no statistically significant difference ($P > 0.05$) [8,14,16,17,19,20]. One study indicated that the most common adverse events in both treatment regimens were abdominal pain, bloating, diarrhea, headache, and dysgeusia, with a significantly lower incidence in the TPZ group compared with the PPI group (30.8% vs. 34.9%; OR = 0.88, 95% CI: 0.78–1.00, $P = 0.04$, $I^2 = 67\%$) [15]. Another study reported that the incidence of adverse events was similar between the TPZ and PPI groups in both first-line and second-line treatments (OR = 0.924, 95% CI: 0.759–1.125). In first-line treatment, the TPZ group showed a significantly lower incidence of abdominal discomfort (OR = 0.490, 95% CI: 0.268–0.897). At 7 days of treatment, the TPZ group exhibited an increased risk of abdominal pain, while at 14 days, the TPZ group demonstrated a reduced risk of diarrhea [13]. A single study indicated that the TPZ group had a higher risk of abnormal liver function compared with the PPI group (RR = 7.60, 95% CI: 1.40–41.27, $P = 0.02$) [20].

3.4.2. Incidence of Drug-Related Adverse Reactions

One study demonstrated a significantly higher incidence of drug-related adverse reactions (DRARs) in the TPZ group compared with the PPI group (RR = 1.23, 95% CI: 1.03–1.48, $P = 0.02$, $I^2 = 0\%$) [17]. Another study showed no statistically significant difference in DRAR incidence between the TPZ and PPI groups (RR = 0.93, 95% CI: 0.51–1.69, $P = 0.81$) [8].

3.4.3. Incidence of Serious Adverse Reactions

The results of four studies showed no statistically significant difference in the incidence of serious adverse reactions between the TPZ and PPI groups ($P > 0.05$) [8,15,17,20].

4. Economic Evaluation

A study [21] conducted from the perspective of China's healthcare system used a Markov model to perform a cost-effectiveness analysis of three treatment regimens for *Helicobacter pylori* (Hp) infection: TPZ, VPZ, and PPI. The results showed that compared with the PPI group, the TPZ group provided an additional 0.017 quality-adjusted life years (QALYs) at an increased total cost of 223 yuan, resulting in an incremental cost-utility ratio (ICUR) of 13,442 yuan per QALY, approximately 0.14 times the 2024 per capita gross domestic product (GDP). Compared with the VPZ group, the TPZ group provided an additional 0.016 QALYs while reducing total costs by 78 yuan, yielding an ICUR of –4,855 yuan per QALY. Therefore, TPZ is more economical than both PPI and VPZ.

5. Discussion

With advancing age, ARDs are more prone to complications and disease progression [22]. In recent years, the successive launch of P-CABs has brought new hope for the treatment of ARDs, establishing them as an important therapeutic option. Based on existing evidence, this study conducted a rapid health technology assessment (rHTA) of TPZ for the treatment of ARDs. The results showed that, in terms of efficacy, TPZ had similar healing effects to PPIs in treating erosive esophagitis (EE), and the length of the treatment cycle did not significantly affect relative efficacy. In the treatment of *H. pylori* infection, the eradication rates of TPZ for both first-line and second-line therapy were higher than those of PPIs, although the differences were not statistically significant. Geographical distribution analysis showed that the eradication rate among patients in China was significantly higher than that in South Korea. Treatment duration analysis revealed that the eradication rate of the TPZ regimen increased significantly with prolonged treatment, with the highest rate observed at 14 days, followed by 10 days—both significantly higher than at 7 days. Regimen analysis showed that, compared with triple therapy, dual therapy and bismuth-based quadruple therapy achieved significantly higher *H. pylori* eradication rates. For antibiotic-susceptible or -resistant *H. pylori* infections, TPZ demonstrated a significantly higher eradication rate than PPIs in patients with clarithromycin resistance. Both TPZ and PPIs exhibited high compliance rates in first-line and second-line treatments. Additionally, relevant studies have shown that, in terms of nocturnal acid suppression, TPZ exhibited significant advantages over other treatment regimens, including H_2 receptor antagonists, isomer PPIs, conventional PPIs, and novel PPIs [23].

Regarding safety, most patients in both the TPZ and PPI groups experienced mild to moderate adverse reactions, with few severe adverse reactions. There was no statistically significant difference between the two groups in terms of total adverse reactions, drug-related adverse reactions, or severe adverse reactions. For common adverse reactions (abdominal pain, abdominal distension, diarrhea, headache, and taste disturbances), the incidence in the TPZ group was significantly lower than that in the PPI group. However, the risk of abnormal liver function was higher in the TPZ group than in the PPI group. Notably, the results of two studies on drug-related adverse reactions differed, which may be attributed to the fact that Hussaini et al. [8] included one additional study compared with Nayyer et al. [17]. The results from that additional study showed a lower incidence of adverse reactions in the TPZ group. Consequently, the overall results of Hussaini et al. [8] indicated no statistically significant difference in the incidence of drug-related adverse reactions between the TPZ and PPI groups.

In terms of cost-effectiveness, a cost-utility analysis was conducted for the treatment of *H. pylori* infection with TPZ, VPZ, and PPI. Based on the results of the Phase III registration clinical trial of TPZ and VPZ conducted in China, with the simulated population being Chinese patients with *H. pylori* infection, the results showed that the bismuth-based quadruple regimen containing TPZ was more cost-effective than the bismuth-based quadruple regimens containing PPI or VPZ. Under the threshold of three times China's per capita GDP, the probability of the TPZ regimen being cost-effective could reach 100%.

This study has several limitations. (1) The research primarily relied on qualitative analysis, resulting in relatively low precision and potential bias. (2) The small sample size of included studies, along with the exclusion of gray literature (e.g., conference papers, unpublished data), may have favored negative results, leading to biased effect size estimation. (3) Although the inclusion of low-quality studies did not alter the overall conclusions of this evaluation, the uncertainty associated with potential bias in the original studies may affect the results. (4) Some data from pharmacoeconomic studies were sourced from South Korea; although South Korea is part of the Asian population, this may limit the generalizability of the model results. Additionally, the study was conducted from the perspective of China's healthcare system and did not incorporate data from other countries, which may limit the external validity of conclusions derived from a single economic evidence source. In summary, current research evidence remains limited, and more large-scale, multidimensional, and methodologically rigorous high-quality studies are needed to further strengthen the scientific validity and reliability of the findings.

6. Conclusion

In conclusion, TPZ demonstrates favorable efficacy, safety, and cost-effectiveness in the treatment of ARDs. However, further large-scale, real-world studies across different regions are still needed to enroll patients with diverse clinical characteristics, thereby providing more comprehensive and objective clinical evidence that reflects actual clinical practice. This will facilitate a precise evaluation of the clinical value of TPZ.

Abbreviations

ARDs = Acid-Related Diseases, GERD = gastroesophageal reflux disease, PU = peptic ulcer, Hp = *helicobacter pylori*, PPIs = proton pump inhibitors, P-CABs = potassium-competitive acid blockers, TPZ = tegoprazan, rHTA = rapid health technology assessment, EE = erosive esophagitis, ICER = incremental cost-effectiveness ratio, ICUR = incremental cost-utility ratio, HTA = health technology assessment, SR = systematic review, RR = relative risk, OR = odds ratio, CI = confidence interval, ITT = Intention-To-Treat, PP = Per-Protocol, QALY = quality-adjusted life year, GDP = Gross Domestic Product.

Declarations

Ethics approval and consent to participate

not applicable

Funding

The author(s) declared that financial support was received for this work and/or its publication. This study was supported by Hospital Pharmacy Special Research Project of Hebei Pharmaceutical Association for 2022–2024 (2022-Hbsyxhqjyxqn15).

Author Contribution

XL.W. and XY.W. conceptualized the study and drafted the initial report. Literature search, article selection, and data extraction were carried out by XL.W., L.L., Y.L., and Y.Z. Statistical analysis, data interpretation, and critical revision of the manuscript were contributed by XL.W., L.L., Y.L., S.L., and XY.W. All authors reviewed and approved the final manuscript.

Acknowledgments

We want to thank all the authors who participated in this study.

Competing interests

Conflict of Interest All authors declare no conflict of interest

References

1. Xie DH, Xie LX, Fang C, et al. New advances of nanozymes for the diagnosis and treatment of digestive system diseases (Review)[J]. *Int J Mol Med*, 2025, 56(5): 176.
2. Zhu BQ, Chen L, Tao X, et al. Current research status and trends of potassium-competitive acid blockers in the treatment of acid-related diseases: a bibliometric analysis[J]. *Front Pharmacol*, 2025, 15:1477633.
3. Li CY, Su M, Yan YY, et al. KFP-H008 blocks gastric acid secretion through inhibiting H(+)-K(+)-ATPase[J]. *Eur J Pharmacol*, 2017, 810:112–119.
4. Nishida H, Arikawa Y, Hirase K, et al. Identification of a novel fluoropyrrole derivative as a potassium-competitive acid blocker with long duration of action[J]. *Bioorg Med Chem*, 2017, 25(13):3298–3314.
5. Abdel-Aziz Y, Metz DC, Howden CW. Review article: potassium-competitive acid blockers for the treatment of acid-related disorders[J]. *Aliment Pharmacol Ther*, 2021, 53(7):794–809.
6. Sugano K. Vonoprazan fumarate, a novel potassium-competitive acid blocker, in the management of gastroesophageal reflux disease: safety and clinical evidence to date[J]. *Therap Adv Gastroenterol*, 2018, (11):1756283X17745776.
7. Scott DR, Munson KB, Marcus EA, et al. The binding selectivity of vonoprazan (TAK-438) to the gastric H⁺, K⁺ -ATPase[J]. *Aliment Pharmacol Ther*, 2015, 42(11–12):1315–1326.
8. Hussaini H, Kebede TM, Afework TS, et al. Comparative Efficacy and Safety of Tegoprazan Versus Proton Pump Inhibitors for Erosive Esophagitis: A Systematic Review and Meta-Analysis[J]. *Cureus*, 2025, 17(5): e83302.
9. Ye DW, Wang L, Liu SW. Application of health technology assessment in four European countries and its implications for China [J]. *China Pharmacy*, 2022, 33(1):1–6.
10. Hailey D. Toward transparency in health technology assessment: a checklist for HTA reports[J]. *Int J Technol Assess Health Care*, 2003, 19(1): 1–7.
11. Zhang FY, Shen AM, Zeng XT, et al. Interpretation of the AMSTAR 2 quality assessment tool for systematic review methodology [J]. *China Journal of Evidence-Based Cardiovascular Medicine*, 2018, 10(1):14–18.
12. Husereau D, Drummond M, Augustovski F, et al. Consolidated health economic evaluation reporting standards (CHEERS) 2022 explanation and elaboration: a report of the ISPOR CHEERS 2022 good practices task force [J]. *Value Health*, 2022, 25(1): 10–31.
13. Purja S, Lee Y, Kim E. Tegoprazan as First- and Second-Line Therapy for Eradication of *Helicobacter pylori* Infection: A Systematic Review and Meta-Analysis[J]. *J Dig Dis*, 2025, Online ahead of print.
14. Cho JH, Jin SY, Park S. Comparison of tegoprazan and proton pump inhibitors for first-line *Helicobacter pylori* eradication: a systematic review with meta-analysis[J]. *Expert Rev Anti Infect Ther*, 2025, 23(2–4):227–233.
15. Zhang X, Li X, Li JG, et al. Comparison of tegoprazan-based and proton pump inhibitor-based regimens for *Helicobacter pylori* eradication: a meta-analysis and systematic review[J]. *Front Med (Lausanne)*, 2025, 12:1580203.
16. Simadibrata DM, Lesmana E, Damara I, et al. Tegoprazan -Containing Versus Proton Pump Inhibitor-Containing Therapy for First-Line Eradication of *Helicobacter pylori*: A Meta-Analysis of Randomized Controlled Trials[J]. *JGH Open*, 2025, 9(3): e70134.
17. Nayyer MA, Rasool H, Murtaza H, et al. Tegoprazan vs. proton pump inhibitors for erosive esophagitis: a superior alternative or just another option? A systematic review and meta-analysis of randomized controlled trials[J]. *Eur J Gastroenterol Hepatol*, 2025, Online ahead of print.
18. Kanu JE, Soldera J. Treatment of *Helicobacter pylori* with potassium competitive acid blockers: A systematic review and meta-analysis[J]. *World J Gastroenterol*, 2024, 30(9): 1213–1223.
19. Bhatti MI, Safiullah M, Ijaz A, et al. Tegoprazan Versus Proton Pump Inhibitors for Erosive Esophagitis: A Meta-Analysis of Noninferiority Randomized Controlled Trials[J]. *JGH Open*, 2025, 9(11): e70298.
20. Lu RH, Liu JJ, Pang TF, et al. Systematic review and meta-analysis on the efficacy and safety of Tegolizumab for the treatment of gastroesophageal reflux disease [J]. *Journal of Pharmacological Epidemiology*, 2025, 34(11):1294–1301.
21. Zhao MR, Wang P, Wang J. Economic evaluation of Tegolasept for the treatment of *Helicobacter pylori* infection [J]. *China Drug Evaluation*, 2025, 42(02):135–140.
22. Sim DW, Yu JE, Park SY, et al. The first case of tegoprazan-induced urticaria[J]. *J Clin Pharm Ther*, 2020, 45(5): 1187–1189.
23. Zou SP, Ouyang ML, Cheng Q, et al. Acid-suppressive drugs: A systematic review and network meta-analysis of their nocturnal acid-inhibitory effect[J]. *Pharmacotherapy*, 2024, 44(2):171–183.

Figures

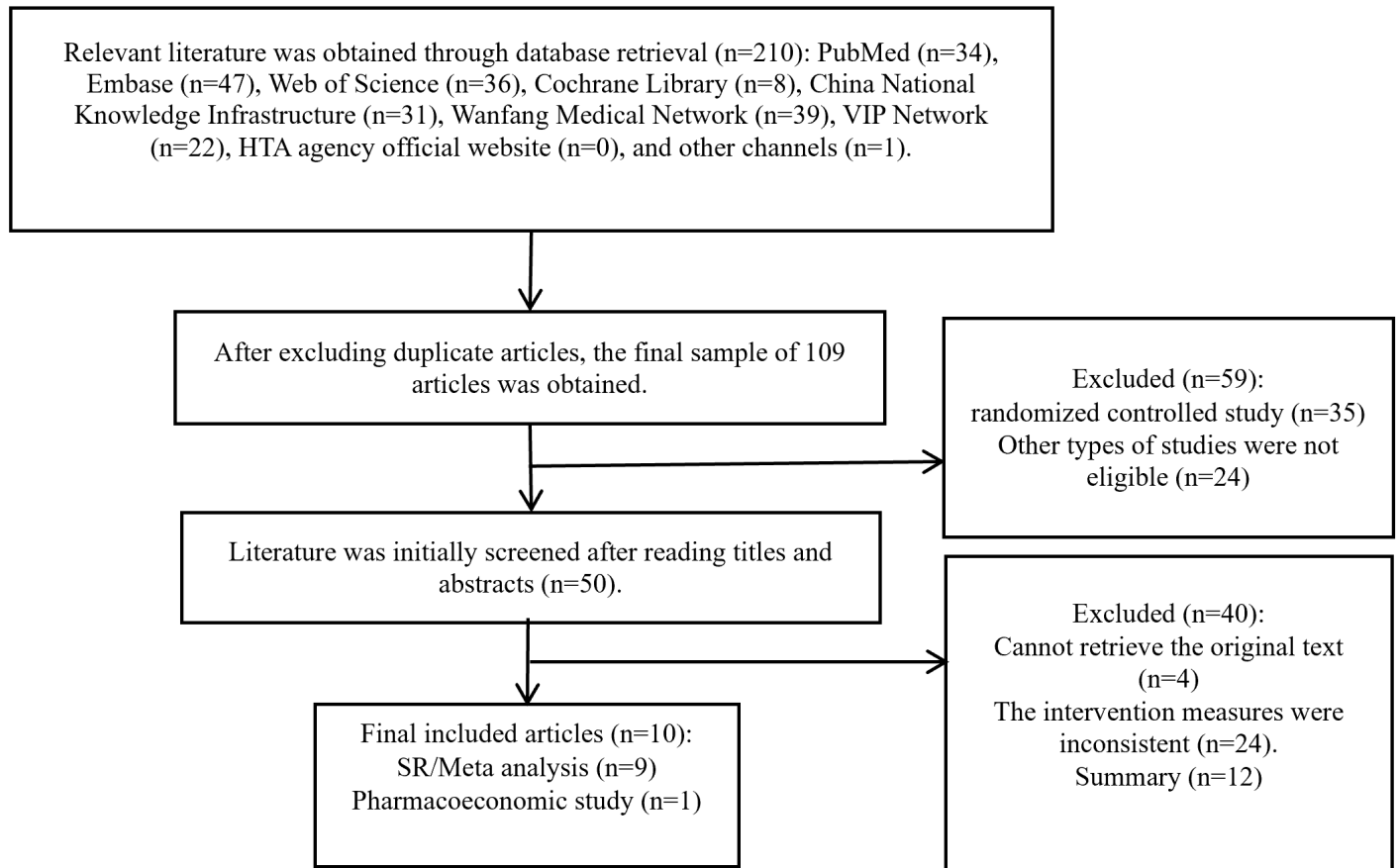


Figure 1

Flowchart of literature screening