Preparation and *in vitro/in vivo* evaluation of a pantoprazole sodium drug-resin liquid delayed release suspension

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Abstract: A drug-resin liquid delayed-release suspension of pantoprazole sodium (PAZ-Na) was prepared to improve the effectiveness, convenience, and safety of peptic ulcer treatment in children, the elderly, and patients with dysphagia. Pantoprazole sodium drug-resin complexes (PAZ-Na-DRC) were prepared using the bath method. The fluidized bed coating method is used to coat it and then add excipients to make a dry suspension prepared before use. The parameters of the in vitro release experimental conditions were optimized, and the drug release curve showed delayed release. Rats were given commercial PAZ-Na enteric-coated pellet capsules and the PAZ-Na delayed release suspension via intragastric administration. The results showed that the T_{max} of the PAZ-Na delayed release suspension was increased from 2h to 4h compared with the PAZ-Na enteric-coated pellet capsules. Similarly, the C_{max} was reduced from 6.162μg/mL to 3.244μg/mL with the concentration-time curve is very gentle compared with the commercial drug capsules. After oral administration, the relative bioavailability of PAZ-Na delayed release suspension (AUC_{0-24} of 19.578 $\mu g \cdot h \cdot mL^{-1}$) compared with the commercial drug (AUC_{0-24} of 17.388 $\mu g \cdot h \cdot mL^{-1}$) was 112.67%. The findings showed that the PAZ-Na delayed release suspension for oral administration was successfully formulated with highly improved pharmacokinetic indices.

Keywords: Anion exchange resin, pantoprazole sodium, delayed release suspension.

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