Effects of pre- and postprandial aspirin on gastric bleeding based on clinical data and *in vitro* study

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Statement of the Problem: Aspirin is a common anti-inflammatory agent. Clinical pharmacists have found an inconsistency in the timing of taking the medicine mentioned on the instructions of different brands of aspirin(100mg). However, there are no relevant research on the medication time of aspirin has been previously studied. This study aimed to investigate the effect of pre- or postprandial aspirin on GI bleeding, guide clinical medication, reduce the risk of gastric hemorrhage and protect patients' reasonable rights.

Methodology & Theoretical Orientation: The rational administration time of enteric-coated aspirin tablets was explored through retrospective analysis of cases and *in vitro* drug dissolution tests. Data from 100 patients taking enteric-coated aspirin tablets in the Second Hospital of Dalian Medical University were retrospectively analyzed. They included baseline information, medical history, brand of aspirin, time of taking medicine (fasting or postprandial), gastric bleeding situation, and so on. Four groups were divided in the study. The Student t test and c2 test were used for comparison among groups. The *in vitro* study based on high-performance liquid chromatography and basket method conducted in different pH media (1.0–6.8) simulated changes in gastric pH after a meal, with a basket rotation speed of 100 rpm. Findings: In this clinical cases, GI bleeding caused by aspirin had no relevance with the medication time (before or after meals; $P < 0.05$). The *in vitro* dissolution experiment results suggested that no obvious release of enteric-coated aspirin tablets occurred at pH 1.0-5.0, when it increased to 6.8, about 80% of the drug was released. Conclusion & Significance: This study indicated that when the pH of stomach was below 5, aspirin was not released in advance. Patients with an upset stomach should be advised to take aspirin before meals to prevent aspirin release in advance and reduce the damage to the stomach.