Editorial

To flavor or not to flavor the colonoscopy preparation solution?

Colorectal cancer (CRC) is a worldwide health problem and has become the third most commonly diagnosed malignancy affecting the global population. In recent years, CRC in Taiwan has become the most prevalent type of cancer, and is the third leading cause of cancer deaths in the country. It is estimated that approximately 70–80% of CRC cases originate from adenomas, which play a role in the early stages of the carcinoma sequence. Recent evidence also reveals that polypectomy during CRC screening can result in a 50–90% reduction in the rate of CRC mortality. Among the modalities of CRC screening, colonoscopy is the only examination that allows for both identification and removal of polyps during the same procedure. Accordingly, the success of any CRC screening is dependent on the relative quality of the colonoscopy procedure itself. The ability of patients to evacuate their bowels effectively through proper bowel preparation is one of the important factors leading to a successful colonoscopy, which will enhance the adenoma detection rate. To prepare for a colonoscopy procedure properly, patients must consume a purgative solution that bears an unfavorable taste and also induces large-volume diarrhea, with frequently reported bouts of abdominal discomfort, bloating, nausea, and vomiting. Therefore, it is not surprising that inadequate bowel preparation before colonoscopy is common; in fact, up to one-quarter of patients presenting for colonoscopy have prepared inadequately. This inadequate bowel preparation is important because it is linked to poor outcomes and high costs. For example, Rex et al found that patients with inadequate preparation had 45% fewer polyps detected and 5% more incomplete or aborted procedures than those with adequate preparation. Thus, inadequate bowel preparation can lead to more incomplete examinations, identification of fewer polyps, repeated colonoscopies, and a higher cost of care.

Polyethylene glycol (PEG) has become one of the most commonly used regimens for colonoscopy preparation. However, PEG is associated with abdominal fullness due to large-volume fluid intake, which is sometimes accompanied by uncomfortable sensations of fullness, nausea, and vomiting. As a result, administering low-volume PEG combined with adjunctive laxatives has proven to be effective as compared with large-volume PEG, and this solution mixture is better tolerated by patients undergoing colonoscopy. Nevertheless, some patients still suffer from abdominal discomfort during the colonoscopy preparation. In the current issue of *Journal of the Chinese Medical Association*, Lan et al conducted an open trial to evaluate the beneficial effect of adding *Citrus reticulata* peel (CRP) as an adjuvant to low-volume PEG for colonoscopy preparation. In traditional Chinese medicine, *chen pi* (the dried CRP) has been widely used for centuries as a remedy to treat indigestion (fullness, nausea, and vomiting). The peel is aromatic and pungent in taste, and *C. reticulata* has been demonstrated to improve gastrointestinal motility in animal models of both *in vivo* and *in vitro* tests. With the purportedly favorable flavor and taste of CRP and its prokinetic effect, the authors tried to confirm that CRP may improve the patients’ tolerance and quality of colonoscopy preparation in an open trial. The authors identified a trend that, from the endoscopists’ point of view, may enable better colonic visibility in the PEG + CRP group. The acceptance rate and adverse effects including vomiting, bloating, and insomnia were also significantly lower in the PEG + CRP group. Nevertheless, the incomplete preparation rate in both groups is extremely low and without significant difference (0% vs. 2.9%).

Very few reports are available that compare the effect of flavor on patient tolerance and acceptance during colonic preparation. Froehlich et al first compared the PEG solution with regular and low-salt content alternatives in a double-blinded fashion. They found that the difference in the salt concentrations of the two solutions could not be regularly distinguished by a group of healthy volunteers. Both Matter and Diab and Marshall found that patients seemed to prefer lemon-flavored solution over other PEG solutions. However, around 20% of the patients still favored the unflavored solution. Hayes et al further demonstrated that flavor does not appear to be a factor in respondents’ completion of the colon preparation nor in the effectiveness of cleansing. From these previous studies, and from Lan and team’s investigation, we can conclude that while adding flavor may increase patients’ acceptance and tolerance of colonic preparation solution, it seemed not to affect the effectiveness of bowel cleaning.

The mechanism behind the beneficial effect of CRP and patient acceptance and tolerance is unclear. As stated in the paper, it can be complex, factoring in the influence of a combination of both prokinetic and aroma effects from CRP. As mentioned, although *C. reticulata* was demonstrated to be effective in enhancing gastrointestinal motility in animal models, the active component responsible for its prokinetic
effect remains unknown. Further research that better elucidates the identification and even purification of this unknown substance may contribute to the field. The physiological and psychological effects of aromatherapy have been recognized in folk medicine for a long time. Despite this fact, it has also been demonstrated that placebo can be as effective as aromatherapy in relieving postoperative nausea. Thus, the beneficial effect observed in the current study can potentially be, at least in part, from the placebo effect.

In conclusion, adding flavor as an adjuvant to colonoscopy preparation may increase the patient’s tolerance and acceptance of the preparation solution. However, this modification did not seem to influence the effectiveness of patient bowel cleaning greatly.

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