

# 复方中药健脾丸和保和丸对小鼠胃肠运动的影响

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## Effects of Chinese herb complex Jianpiwan and Baohewan on gastrointestinal motility in rats

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### Abstract

AIM: To investigate the effects of Jianpiwan and Baohewan on gastrointestinal motility in rats.

METHODS: Using dextran blue 2000 as a gastrointestinal internal marker its relative remaining rate in stomach and its pushing ratio of the bowel, we observed the effects of Jianpiwan and Baohewan on the emptying of stomach and the driving of bowel in normal and splenic asthenic rats.

RESULTS: Baohewan and Jianpiwan had evidently promoting effect on emptying of stomach in normal and splenic asthenic rats  $0.02.9 \pm 0.03.3$  vs  $0.05.9 \pm 0.03.5$ ;  $0.018 \pm 0.010$  vs  $0.059 \pm 0.035$ ;  $0.036 \pm 0.028$  vs  $0.089 \pm 0.042$ ;  $0.029 \pm 0.026$  vs  $0.089 \pm 0.042$  ( $P < 0.05$ ). Baohewan had better effect than Jianpiwan on the driving of bowel in normal rats  $58.8 \pm 11.3$  vs  $51.6 \pm 9.7$  ( $P < 0.05$ ). For splenic asthenic rats whose vermiculation was reinforced, Baohewan still had promoting effect  $63.5 \pm 6.1$  vs  $54.1 \pm 12.3$ , ( $P < 0.05$ ) and Jianpiwan can slow the vermiculation and help it recover to normal levels  $43.0 \pm 7.1$  vs  $54.1 \pm 12.3$  ( $P < 0.05$ ).

CONCLUSION: Baohewan and Jianpiwan have promoting and adjusting effects on gastrointestinal motility in rats.

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### 摘要

目的: 观察传统的消食导滞方剂保和丸和健脾丸对小鼠胃肠运动功能的影响。

方法: 以胃肠内标记物葡聚糖蓝 - 2 000 在胃内色素残留量及小肠推进比为指标, 观察各实验组对正常脾虚模型小鼠胃排空及肠推进的影响。

结果: 保和丸、健脾丸对正常小鼠及脾虚模型小鼠的胃排空均起到明显的促进作用  $0.029 \pm 0.033$  vs  $0.059 \pm 0.035$ ;  $0.018 \pm 0.010$  vs  $0.059 \pm 0.035$ ;  $0.036 \pm 0.028$  vs  $0.089 \pm 0.042$ ;  $0.029 \pm 0.026$  vs  $0.089 \pm 0.042$ . ( $P < 0.05$ ); 对正常小鼠的肠推进运动的促进作用, 保和丸则更优于健脾丸  $58.8 \pm 11.3$  vs  $51.6 \pm 9.7$ , ( $P < 0.05$ ). 对肠蠕动功能增强的“脾虚”模型小鼠的肠推进运动, 保和丸仍有促进作用  $63.5 \pm 6.1$  vs  $54.1 \pm 12.3$ , ( $P < 0.05$ ), 而健脾丸则可调节使其减慢而恢复正常  $43.0 \pm 7.1$  vs  $54.1 \pm 12.3$ , ( $P < 0.05$ ).

结论: 保和丸及健脾丸对胃肠运动功能可起到促进及调节作用。

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### 0 引言

保和丸和健脾丸均缘于古代经典名方, 是临床上常用的消食导滞方剂, 对饮食停滞、腹胀、痞满等症均有一定的治疗作用. 我们通过在小鼠实验, 分别观察了保和丸和健脾丸对胃肠运动的影响, 以便指导临床合理用药.

### 1 材料和方法

1.1 材料 保和丸、健脾丸均选择由传统方剂制成的成药 (西安碑林中药厂提供), 用蒸馏水溶解, 根据动物实验药物计量公式计算, 配成浓度为 120 g/L 的混悬液, 药量相当于成人药量的 6.94 倍. 胃肠内标记物葡聚糖蓝 - 2 000 (购自于 Pharmacia 公司), 用去离子水配成 20 g/L 的溶液. ICR 品系小鼠, 清洁级, 全雄, 体质量  $20 \pm 2$  g, 由西安交通大学动物实验中心提供, 陕医动证字: 08 - 004 号.

1.2 方法 给予小鼠皮下注射利血平  $0.2$  mg/kg, 1 次  $d^{-1}$ , 连续 9 d. 小鼠肌注利血平后体质量逐渐减轻、活动减少、食量减少、皮毛松散、粪便由颗粒状成为软便, 说明脾虚造模成功<sup>[1]</sup>. 取正常小鼠 60 只随机分为保和丸

组、健脾丸组及正常对照组, 每组 20 只. 脾虚模型小鼠 30 只亦随机分为保和丸组、健脾丸组及正常对照组, 每组 10 只. 实验前禁食不禁水 12 h. 中药组分别灌服保和丸、健脾丸溶液, 每只 20 ml/kg (灌服量均按成人体表面积折算). 空白对照组灌服同体积的蒸馏水. 灌服后 30 min 再灌 20 g/L 葡聚糖蓝 - 2 000 0.2 mL, 20 min 后脱颈处死, 剖腹取全胃肠. 自幽门括约肌处取胃, 沿胃大弯侧剪开, 将胃内色素残留物充分洗于 4 mL 去离子水中, 3 500 r/min 离心 15 min, 取上清滤液, 用 721 - A 型分光光度计在 620 nm 处测吸光度为胃内色素残留量, 求出与对照组均值的百分比即为各样本的胃内色素相对残留量. 同时量取幽门括约肌至色素最前段及至盲肠的距离, 以二者之比为小肠推进比.

## 2 结果

正常小鼠保和丸组及健脾丸组的胃内色素残留量均较对照组显著减少 ( $P < 0.05$ ), 但两组之间无显著性差异 ( $P > 0.05$ ). 两组的小肠推进比均较对照组显著升高 ( $P < 0.05$ ) 而保和丸组则更优于健脾丸组 ( $P < 0.05$ , 表 1). 脾虚模型小鼠胃内色素残留量较正常小鼠显著增多 ( $P < 0.05$ ), 而小肠推进比较正常小鼠则显著增高 ( $P < 0.05$ ). 脾虚模型小鼠保和丸组及健脾丸组的胃内色素残留量较对照组显著减少 ( $P < 0.05$ ), 小肠推进比保和丸组较对照组显著升高 ( $P < 0.05$ ), 而健脾丸组则降低 ( $P < 0.05$ , 表 2)

表 1 正常小鼠各组胃内色素残留量及小肠推进比 ( $\bar{x} \pm s, n=20$ )

分组	胃内色素残留量(%)	小肠推进比
对照组	0.059 ± 0.035	44.0 ± 9.4
保和丸	0.029 ± 0.033 <sup>a</sup>	58.8 ± 11.3 <sup>ac</sup>
健脾丸	0.018 ± 0.010 <sup>a</sup>	51.6 ± 9.7 <sup>a</sup>

<sup>a</sup> $P < 0.05$ , vs 对照组; <sup>c</sup> $P < 0.05$  vs 健脾丸组

表 2 脾虚模型小鼠各组胃内色素残留量及小肠推进比 ( $\bar{x} \pm s, n=10$ )

分组	胃内色素残留量(%)	小肠推进比
对照组	0.089 ± 0.042	541 ± 123
保和丸	0.036 ± 0.028 <sup>a</sup>	635 ± 61 <sup>a</sup>
健脾丸	0.029 ± 0.026 <sup>a</sup>	430 ± 71 <sup>a</sup>

<sup>a</sup> $P < 0.05$ , vs 对照组

## 3 讨论

由于胃排空及肠蠕动的异常所导致的胃肠功能紊乱性疾病临床上较为常见<sup>[2-19]</sup>, 目前治疗这些疾病的主要措施是调节胃肠动力<sup>[9,14-26,20-29]</sup>. 中医学中虽无胃肠动力的概念, 但实际上已有不少方剂被广泛而有效地用于治疗胃肠动力障碍的各种症状<sup>[1,21-25,30-36,38]</sup>. 目前临床应用较多的为具有理气、消食、化湿及泻下作用的中药,

方剂常选择保和丸、健脾丸等. 保和丸缘自《丹溪心法》, 方剂组成为山楂、神曲、半夏、茯苓、陈皮、连翘、莱菔子, 为治疗食积的通用方, 以脘痞腹胀、恶食噎腐为主证, 起到消食化滞、理气和胃之功效. 健脾丸缘自《证治准绳》, 方剂组成为白术、木香、黄连、甘草、白茯苓、人参、神曲、陈皮、砂仁、麦芽、山楂、山药、煨肉蔻, 主治脾虚胃弱、食积化热之证, 起到健脾和胃、消食止泻之功效. 为了从现代医学理论角度进一步研究传统中药方剂的作用机制, 我们选择了最常用的消食导滞方剂中的保和丸、健脾丸观察其对胃肠运动功能的作用. 结果表明: 保和丸、健脾丸对正常小鼠的胃排空及肠推进运动均起到了明显的促进作用, 对胃排空的促进作用二者之间无显著性差异, 而对肠推进运动的促进作用保和丸则更优于健脾丸.

脾虚证为临床常见病证, 表现为胃脘胀痛、纳差、倦怠、消瘦等, 主要是由于脾虚运动功能失司所造成的<sup>[37,40,41]</sup>. 研究表明脾虚患者和动物由于多种胃肠激素紊乱而存在明显的胃肠功能障碍<sup>[5-7,36,38-40]</sup>. 因此, 调节胃肠功能是治疗脾虚所致的各种疾病尤其是消化系统疾病的重要手段. 脾虚证时因其发展的早、晚期胃肠激素的不同改变, 而出现不同的胃肠功能异常. 早期胃运动功能减弱而肠运动功能增强, 晚期胃运动及肠蠕动功能均减弱<sup>[36]</sup>. 因此, 脾虚患者不单是存在肠运动功能降低的病理改变, 还有相当部分患者表现为肠运动功能亢进, 从而出现腹泻、肠鸣等症状表现. 我们所设计的实验中用利血平所致脾虚证小鼠模型, 其胃排空较正常小鼠明显减慢, 小肠推进比较正常小鼠增快, 属脾虚早期模型. 保和丸对其胃排空及肠推进运动均有明显的促进作用. 健脾丸对其胃排空起到一定的促进作用, 而对肠推进功能反而抑制使其减慢, 从而起到调节作用使其恢复正常. 从以上实验可以看出, 保和丸及健脾丸对胃肠的运动功能均可起到促进作用, 但因保和丸中以消导食积滞的药物为主, 故对肠道仅有促进作用, 且优于健脾丸. 健脾丸中由于健脾益气的中药成分占主导作用, 辅以消食导滞的药物, 故对脾虚造成的肠功能紊乱可起到双向调节作用.

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