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不同配伍对半夏泻心汤皂苷类成分的肠菌代谢影响研究

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作者中文名	作者英文名	单位中文名	单位英文名	E-Mail
肖娟	XIAO Juan	上海中医药大学 中药学院，上海 201203	School of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China	
张宜凡	ZHANG Yi-fan	上海中医药大学 中药学院，上海 201203 上海医药高等专科学校药学系，上海 201318	School of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China Department of Pharmacy, Shanghai Institute of Health Science, Shanghai 201318, China	
王莹	WANG Ying	上海中医药大学 中药学院，上海 201203	School of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China	
安叡	AN Rui	上海中医药大学 中药学院，上海 201203	School of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China	
王新宏	WANG Xin-hong	上海中医药大学 中药学院，上海 201203	School of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China	wangxinh6020@126.com

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中文摘要：目的：比较肠道菌群对半夏泻心汤全方组、甘补组及其单味人参和甘草中皂苷类成分代谢的影响。方法：利用体外肠道菌群厌氧孵育的技术,研究全方组、甘补组及其单味药提取液与大鼠肠道菌群37 ℃厌氧环境下培养,采集不同孵育时间点样品,利用LC-MS/MS分析方法进行各原型物及代谢产物的快速分离和含量测定,并求其降解速率*K*,比较不同配伍组的代谢差异和特征。结果：肠道菌群可将皂苷类成分转化为其代谢产物。根据SPSS单因素方差比较得知不同配伍组中皂苷成分代谢存在差异,甘草酸的降解速率甘补组>全方组>单方组(P<0.05);Rb_1在全方中降解最慢;Re的降解速率全方组>单方组>甘补组(P<0.05);Rg_1可由Re代谢产生,后降解为Rh_1,且降解速率单方组>甘补组>全方组(P<0.05)。结论：全方、甘补组对人参皂苷肠菌代谢具有不同的诱导或抑制作用,全方组可以抑制Rb_1,Rg_1的代谢,促进甘草酸代谢为甘草次酸,利于吸收发挥药效。复方配伍对Rd,Rg_3的肠菌代谢没有影响。

中文关键词：半夏泻心汤 配伍 皂苷 肠菌代谢 LC-MS/MS

Study on effect of different compatibility of saponins contained in Banxia Xiexin Tang on intestinal bacterium metabolism

Abstract:Objective: To compare the effect of intestinal flora on the metabolism of the Banxia Xiexin Tang (BXT) full prescription group, the sweet-nourishing group and saponins contained in single ingredients ginseng and liquorices. **Method:** The anaerobic incubation technology for intestinal flora *in vitro* was adopted to incubate the BXT full prescription group, the sweet-nourishing group and extracting solution of the single ingredients, under anaerobic conditions at 37 ℃. Samples of different incubating time points were collected. The high-speed separation and content determination of various prototypes and metabolites were conducted with LC-MS/MS method, and then their degradation rate *K* was calculated to observe the difference and characteristics in metabolism of different compatible groups. **Result:** Intestinal flora could transform saponins into their metabolites. Having comparing spss one factor variance, we learned the difference in saponin metabolites of different compatible groups. As for the degradation rate of glycyrrhizic acid, the sweet-nourishing group > the full

prescription group > the single prescription group (P<0.05). Rb_1 degraded the most slowly in the full prescription group. As for the degradation rate of Re, the single prescription group > the sweet-nourishing group > the full prescription group (P<0.05). **Conclusion:** The sweet-nourishing group and the sweet-nourishing group have different effect in inducing or inhibiting intestinal flora. The single prescription group shows in inhibition in metabolites of Rb_1 and Rg_1. Glycyrrhizic acid metabolites are promoted by glycyrrhetinic acid, which facilitates the efficacy of drug absorption. The compatibility of compounds has no impact on metabolites of Rb_1 and Rg_3.

keywords: Banxia Xiexin Tang drug compatibility saponin intestinal flora metabolism LC-MS/MS