

论著

当归多糖对幼年大鼠染铅所致贫血的治疗作用

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摘要 目的 探讨当归多糖(APS)对染铅大鼠的驱铅作用和对染铅所致贫血的治疗作用。方法 4周龄SD幼鼠ip给予醋酸铅 $30 \text{ mg} \cdot \text{kg}^{-1}$, 隔天1次, 连续7次, 建立铅性贫血模型。建模第2天, ip给予APS 15, 30, 60 和 $120 \text{ mg} \cdot \text{kg}^{-1}$, 每天1次, 共14 d。以给药当天为第1天, 分别于给药前第7和14天剪尾取血, 检测血铅(BPb)、血红蛋白(Hb)和红细胞(RBC)。第14天处死大鼠, 股动脉取血, 测定BPb、Hb、RBC、血细胞比容(Hct)、 δ -氨基乙酰丙酸脱水酶(ALAD)活性和锌原卟啉(ZPP)浓度。采用石墨炉原子吸收光谱法测定全血血铅含量; 采用氰化高铁法测定Hb含量; 采用显微镜计数法计数RBC; 采用血球分析仪测定Hct; 采用二甲氨基苯甲醛法比色法测定全血ALAD活性; 采用锌原卟啉血液荧光测定仪测定ZPP。结果 与正常对照组比较, 给药前第7天和第14天模型组BPb含量显著升高, Hb和RBC明显降低($P < 0.01$); 与给药前相比模型组第7和14天BPb含量均明显降低($P < 0.01$)。与模型组相比, 给APS $15 \sim 120 \text{ mg} \cdot \text{kg}^{-1}$ 第7天和第14天, BPb明显降低, 并且第14天明显低于第7天, 但均显著高于对应的正常对照组($P < 0.01$); Hb和RBC明显升高, 并且第14天明显高于第7天, Hb分别增加了33.4%, 34.1%, 21.0%和34.6%, RBC分别增加了28.5%, 17.9%, 18.3%和19.2% ($P < 0.01$), 基本恢复至正常对照组水平。与模型组相比, 给予APS $15 \sim 120 \text{ mg} \cdot \text{kg}^{-1}$ 第14天, Hct明显升高, 并且恢复至正常对照组水平; ALAD明显升高($P < 0.01$), 但仍显著低于正常对照组水平($P < 0.01$); ZPP明显降低, 但仍显著高于正常对照组水平($P < 0.01$)。二巯基丁二酸 $120 \text{ mg} \cdot \text{kg}^{-1}$ 作用与APS一致、效果相当。结论 APS具有明显的驱铅作用, 对染铅所致贫血具有治疗作用。

关键词 [当归多糖](#) [血铅](#) [贫血](#)

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Effect of Angelica polysaccharides on anemia of young rats exposed to lead

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Abstract

OBJECTIVE To investigate effect of Angelica polysaccharides (APS) on expelling lead and on anemia of young rats exposed to lead. METNODS Four-week-old SD rats were ip given lead acetate $30 \text{ mg} \cdot \text{kg}^{-1}$ every other day, for 14 d. APS 15, 30, 60 and $120 \text{ mg} \cdot \text{kg}^{-1}$ were ig given on the 2nd day after model established, once daily. On the day before drug, the 7th and 14th days after drug, blood samples were collected and blood lead (BPb), hemoglobin (Hb) and red blood cells (RBC) were detected. On the 14th day after drug all the rats were sacrificed and RBC hematocrit (Hct), δ -aminolevulinic acid dehydratase (ALAD) activity and zinc original porphyrin (ZPP) concentration were detected. BPb level was detected by graphite furnace atomic absorption spectrometry. Hb content was detected by GaoTieFa cyanide. RBC count was tested by microscope count method. Hct, ALAD activity and ZPP concentration were detected by blood analyzer, paradimethylamino benzaldehyde colorimetric method and zinc porphyrin blood fluorescence detector, respectively. **RESULTS** Compared with normal group, BPb content in model group on the day before drug, 7th and 14th day significantly increased, and Hb and RBC decreased ($P < 0.01$). Compared with model group, BPb contents in APS $15 \sim 120 \text{ mg} \cdot \text{kg}^{-1}$ groups on the 7th day and 14th day significantly decreased, but still higher than those in corresponding normal group ($P < 0.01$). Hb and RBC in APS $15 \sim 120 \text{ mg} \cdot \text{kg}^{-1}$ on the 7th day and the 14th day significantly increased ($P < 0.01$). Moreover, compared with the 7th day, Hb increased by 33.4%, 34.1%, 21.0% and 34.6%, RBC increased 28.5%, 17.9%, 18.3% and 19.2% on the 14th day in APS $15 \sim 120 \text{ mg} \cdot \text{kg}^{-1}$ groups, respectively ($P < 0.01$).

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Compared with model group, Hct in APS 15-120 mg · kg⁻¹ groups on the 14th day significantly increased (P<0.01), and was similar to that in normal group. ALAD significantly increased (P<0.01). meso-2,3 Dimercaptosuccinic acid 120 mg · kg⁻¹ had the same effects as APS on the anemia model. CONCLUSION APS has the obvious effect on expelling lead and can improve anemia of young rats exposed to lead.

Key words [Angelica polysaccharide](#) [blood lead](#) [intervention](#) [anemia](#)

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