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何首乌提取物对**C57BL/6J**小鼠毛囊生长和毛发生长周期的影响

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中文摘要**:**目的: 观察何首乌提取物对C57BL/6J小鼠毛囊体外培养和在体毛发生长周期的影响。 方法: 对小鼠毛囊生长的影响采用C57BL/6J小鼠触须毛囊体外培养模型,实验分为9组,空白对照组(蒸馏水)、阳性对照组(章光101)、何首乌提取物75,150,300,600,1 200,2 500,5 000 μg·L^{-1}组,24孔板,每孔2枚毛囊,培养12 d,通过观察毛发生长时间和生长速度,评价何首乌提取物对毛囊生长的影响;对小鼠毛发生长周期的影响采用C57BL/6J小鼠背部脱毛,分为5组,阳性对照组(章光101)、空白对照组、何首乌提取物高、中、低(2,1,0.5 g·mL^{-1})剂量组,涂抹不同浓度的何首乌提取物,观察其对小鼠毛发生长周期的影响。 结果: 体外毛囊培养实验表明,何首乌提取物在300,600,1 200 μg·L^{-1}浓度时对毛囊生长早、中、晚期都有加速生长的作用,并可延长毛发的生长时间,且在早、中期呈现一定的剂量依赖性,与空白对照组比较均有显著性差异。其中300 μg·L^{-1}时,第2,6,12天毛发生长速度分别为(0.236±0.061),(0.427±0.078),(0.325±0.054) mm·d^{-1},毛发生长时间为(9.60±1.43) d,与空白对照组比较P<0.01,与阳性对照组比较P<0.01;600 μg·L^{-1}时,第2,6天,毛发生长速度分别为(0.313±0.044),(0.522±0.084) mm·d^{-1},与空白对照组比较P<0.01,与阳性对照组比较P<0.05,第12天为(0.439±0.064) mm·d^{-1},毛发生长时间为(11.00±1.15) d,与空白对照组比较P<0.01;1 200 μg·L^{-1}时,第2,6,12天毛发生长速度分别为(0.406±0.053), (0.642±0.067), (0.475±0.036) mm·d^{-1};毛发生长时间为(12.40±1.43) d,与空白对照组比较P<0.01。体内药效学实验表明,何首乌提取物较空白对照组可以使毛发从休止期进入生长期,加速毛发的生长,具有显著性差异。高剂量组时皮肤粉红到变灰的时间为(9.06±0.43) d,灰色皮肤长出毛的时间为(14.68±1.19) d,皮肤长满毛的时间为(26.86±2.02) d,与空白对照组比较P<0.01,较中、低剂量可以加速皮肤黑色素的形成; 毛发生长后期,剂量依赖关系不明显。 结论: 何首乌提取物能诱导C57BL/6J小鼠毛发生长,使其从休止期进入生长期,从而加速毛发生长,体内、外实验结果一致。

中文关键词**:**何首乌 C57BL/6J小鼠 毛发生长周期 毛囊生长

Influence of the Extract of Polygoni Multiflori Radix on Follicle Growth and Hair Growth of C57BL/6J

Abstract: Objective: To study the influence of the extract of Polygoni Multiflori Radix on follicle growth and hair growth of C57BL/6J. Method: The model of organ culture of mouse vibrissa follicle *in vitro* was used and the time and velocity of hair growth were recorded to investigate the influence of follicle growth. The experiment had 9 groups: blank control group,positive control group (Zhangguang 101), different content of the extent for 75,150,300,600,1200,2 500,5 000 μg·L^{-1},24 shadow mask, 2 folliculus pili per hole and cultivating 12 d. Treated *in vitro* on hairless mice skin was used to investigate the effects of promoting hair growth with different dose of Polygoni Multiflori Radix. This experiment had 5 groups: positive control group (Zhangguang 101), blank control group,the extract of Polygoni Multiflori Radix high dose group(2 g·mL^{-1}),medium dose group (1 g·mL^{-1}),low dose group (0.5 g·mL^{-1}). Result: The experiment of organ culture of mouse vibrissa follicle *in vitro* showed that the extract of Polygoni Multiflori Radix could accelerate follicle growth in the early, intermediate and terminal phases and prolong the hair growth time with the dose of 300,600,1 200 μg·L^{-1} in a dose-dependent manner and there were significant differences in comparison with normal group. When the content was 300 μg·L^{-1},the velocity of hair growth were(0.236±0.061),(0.427±0.078),(0.325±0.054)mm·d^{-1} on the second, sixth and twelve day, the time of hair growth was (9.60±1.43)d, the differences were significant between the test groups with the blank control and positive control group(P<0.01). When the content was 600 μg·L^{-1},the velocity of hair growth were(0.313±0.044),(0.522±0.084) mm·d^{-1} on the second and sixth day, the differences were significant between the test groups with the blank control group(P<0.01)and between the test groups with

the positive control group (P<0.05), the velocity of hair growth was(0.439±0.064)mm • d^{-1} on the twelve day, the time of hair growth was (11.00±1.15)d, the differences were significant between the test groups with the blank control group (P<0.01). When the content was 1 200 μg • L^{-1},the velocity of hair growth were (0.406±0.053), (0.642±0.067), (0.475±0.036)mm • d^{-1} on the second, sixth and twelve day, the time of hair growth was (12.40±1.43) d, the differences were significant between the test groups with the blank control group(P<0.01).The experiment of pharmacodynamics *in vivo* showed the extract of Polygoni Multiflori Radix can make hair grow from anestrum to growing period with significant difference. High dose group can accelerate the production of melanin in skin than middle and low dose group. The time of high dose group were (9.06±0.43) d when the skin became pale from pink, (14.68±1.19) d when hair came out and (26.86±2.02) d when hair was overgrown, the differences were significant between the test groups with the blank control group(P<0.01). In the later period of hair growth, the dependence on its concentration is not significant. Conclusion: The extract of Polygoni Multiflori Radix can lead hair growth of C57BL/6J mice from anestrum to growing period, the result of experimental *in vivo* and *in vitro* is coincident.

keywords: Polygoni Multiflori Radix C57BL/6J mice growing phase of hair cycle follicle growth

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