中国药理学与毒理学杂志 2013 27 (2): 200-204 ISSN: 1000-3002 CN: 11-1115/R

论著

橄榄叶提取物对实验性兔关节软骨损伤的修复作用

宫德正[1,2]，耿成燕[2]，姜丽平[2]，王丽辉[3]，吉村宽辛[4]，仲来福[2]

1. 大连医科大学 机能学实验室，辽宁 大连 116044；
2. 大连医科大学 中日合作医药科学研究所，辽宁 大连 116044；
3. 大连医科大学 病理学教研室，辽宁 大连 116044；
4. Eisai Food & Chemical Co., Ltd., Nihonbashi, Chuo-ku, Tokyo 103-0027, Japan

收稿日期 2012-6-22 修回日期 2012-12-28 网络版发布日期 2013-4-23 接受日期

摘要 目的 探讨橄榄叶提取物(OLE)对实验性兔关节软骨损伤的修复作用。方法 采用手钻在健康新西兰白兔左后膝关节软骨上打3个直径3 mm、深4 mm的洞，制备关节软骨损伤模型。OLE治疗组通过自由饮水每天给予OLE 500 mg·kg^{-1}，连续21 d；模型对照组自由饮用蒸馏水。3周后，处死家兔，用单盲法肉眼观察评分，评价3个损伤部位(洞)软骨的愈合情况；通过石蜡切片和HE染色于光镜下检查损伤部位软骨再生情况；采用番红O和阿尔辛蓝染色分别检测损伤部位蛋白多糖和糖胺聚糖的合成；分别取左右两侧股二头肌和股内侧大收肌称重，计算手术侧和非手术侧肌肉质量的比率。结果 经单盲法肉眼观察评分，OLE治疗组软骨损伤部位3个洞的愈合总评分为(7.2±1.9)，明显高于模型对照组(4.6±1.3)(P<0.05)。组织学检查结果表明，OLE治疗组在软骨损伤部位(洞)不仅有大量再生的成熟软骨组织，而且再生的软骨组织周围环绕大量增殖的未分化的软骨胚胎细胞；模型对照组在损伤部位(洞)几乎看不见再生的软骨，仅有大量的再生纤维组织。番红O和阿尔辛蓝染色检查结果表明，OLE治疗组软骨损伤部位软骨基质中蛋白多糖合成明显多于模型对照组(P<0.05)，糖胺聚糖含量与模型对照组比较无差异。OLE治疗组股二头肌质量的比率[(100.1±5.7)%]明显高于模型对照组[(89.0±4.9)%](P<0.05)，OLE治疗组股内侧大收肌质量的比率与模型对照组比较无差异。结论 OLE对关节软骨损伤具有修复作用。

关键词 橄榄叶提取物 软骨 损伤 修复

分类号 R285.5

Repair effect of olive leaf extract on experimental cartilaginous injuries in rabbits

GONG De-zheng[1,2], GENG Cheng-yan[2], JIANG Li-ping[2], WANG Li-hui[3], YOSHIMURA Hiroyuki[4], ZHONG Lai-fu[2]

1. Laboratory of Medical Function,;
2. China-Japanese Joint Institute for Medical and Pharmaceutical Science,;
3. Department of Pathology, Dalian Medical University, Dalian 116044, China;
4. Eisai Food & Chemical Co., Ltd., Nihonbashi, Chuo-ku, Tokyo 103-0027, Japan

Abstract

OBJECTIVE To investigate the restorative effect of olive leaf extract (OLE) on experimentally produced cartilaginous injuries in rabbits. **METHODS** The rabbits were randomly divided into two groups. Three holes in the left stifle joint including one in the medial trochlear ridge and two in the trochlear sulcus (proximal and distal) of articular cartilage were prepared surgically using a drill. For the rabbits of control group only tap water was used, and for the OLE group, the water based solution of OLE 500 mg·kg^{-1} was administered daily for 21 d, respectively. At three weeks post-operation, the rabbits were euthanized. The degree of restoration of the experimentally produced holes in the distal femur was observed macroscopically. HE staining was carried out to observe cartilage tissues. Safranin O and Alcian blue staining was used to analyze the synthesis of proteoglycans (PG) and glycosaminoglycan(GAG) in the joint cartilage. The muscle mass ratio (%) was calculated by comparing muscle mass of the operated side with the unoperated side. **RESULTS** The total score of restoration of the three holes in the left stifle joint in OLE group (7.2±1.9) was significantly higher than that in model control group (4.6±1.3) (P<0.05). On the histological examination, the injured parts were covered by fibrous connective tissues in the model control while in the OLE group, the massive proliferation of matured cartilagious tissues was observed, and the regenerated cartilaginous tissue was surrounded by the proliferation of undifferentiated blast cells (fibroblast cartilage cells). The mean density of the restored part with Safranin O staining in OLE group was higher than that in model control group. (P<0.05). The muscle mass ratio of biceps of the femur muscle in OLE group [[(100.1±5.7)%] was significantly higher than that in model control group [(89.0±4.9)%] (P<0.05). **CONCLUSION** OLE is effective for enhancing the repair of cartilaginous injuries.

Key words olive leaf extract cartilage injury repair

DOI: 10.3867/j.issn.1000-3002.2013.02.013

通讯作者 仲来福,E-mail:zhong@dlmedu.edu.cn,Tel:(0411)86110286,FAX:(0411)86110285 zhong@dlmedu.edu.cn