

Osteoarthritis

About the Disease

Osteoarthritis (OA) also known as degenerative joint disease. The degradation of joint includes articular cartilage fibrillation, fissure and partial erosion, full thickness loss of articular cartilage and ends with bone exposed. Symptoms include joint pain, swelling and reduced motion in joints. It can occur in any joint, but usually it affects hands, knees, hips or spine. A variety of causes—hereditary, developmental, metabolic, and mechanical—may initiate processes leading to loss of cartilage. OA is the most common form of arthritis, and the leading cause of chronic disability. It affects about 40 million people in the United states.

Current Treatment

Cartilage has limited ability to repair itself because it doesn't have a blood supply. Medications can help control the pain of OA but nothing can stop the disease process, nor is there an effective way to repair damage that has occurred. In the last decade different surgeries such as autologous chondrocyte implantation (ACI) have been used in clinic. The reparative tissue produced after most cartilage repair techniques can appear normal grossly and even under light microscopy, but cannot withstand the demands required of an articular surface and quickly degenerate (Dr. Buckwalter). If pain becomes debilitating, joint replacement surgery may be used to improve the quality of life. Therefore, osteoarthritis treatment/cartilage repairing is still a big challenge.

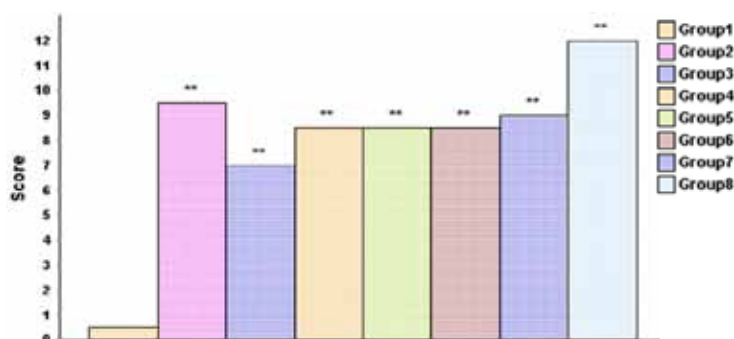


Osteoarthritis Animal Model Available at PharmaLegacy

Transection of the Anterior Cruciate Ligament (ACL)

Animal	Age / Gender	Method	Treatment
Sprague Dawley Rats	20 weeks	unilateral transection of anterior cruciate ligament (ACL)	Reagent treatment in different groups Treatment duration was 40 days, Suggested making OA model period in rats 4-5 weeks after ACLT
New Zealand white rabbits	1 year Male/female	unilateral transection of anterior cruciate ligament (ACL)	No treatment; Suggested making OA model period in rabbits ≤ 8 Week after the ACLT

Mean Histopathology Score of Rat OA Models



Histopathology scores were compared to the vehicle treated group by test compound and its dosage, respectively, with Mann-Whitney Rank Test and $p < 0.05$ being considered statistically significant.

N = 12

**P < 0.05 *P < 0.01 significantly different from Group 1

Reference

1. Badlani N, Inoue A, R. Healey R. Coutts R, D. Amiel D, 2008;6: 600-606
2. Arrich J, Piribauer F, Mad P, Schmid D, Klaushofer K, Müllner M (April 2005). CMAJ 172 (8):
3. Rutjes AW, Nuesch E, Sterchi R, et al. (2009)Cochrane Database Syst Rev (4): CD002823.
4. Buckwalter JA, Martin JA, Brown TD Biorheology. 2006;43(3-4):603-9

Gross Examination and Histopathology Evaluation of Female Rabbits 9 Weeks after ACLT



Sham-contralateral



Sham - operated



ACLT - contralateral

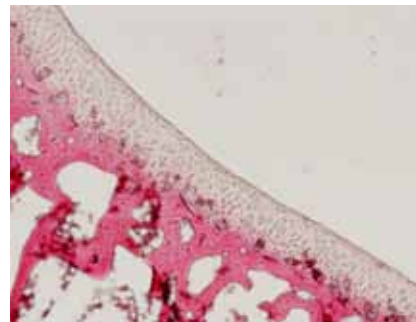


ACLT - operated

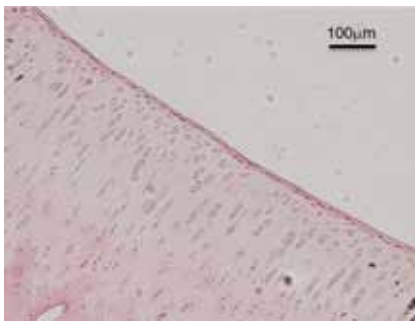
PL09-V0002#4L 4X Ctr femoral condyles



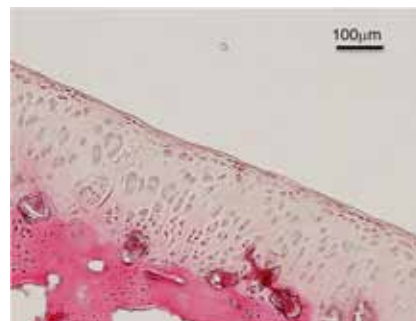
PL09-V0002#4L 4X ACLT femoral condyles



PL09-V0002#4L 10X Ctr femoral condyles



PL09-V0002#4L 10X ACLT femoral condyles



The contralateral (Ctr) femoral condyles have no remarkable gross changes. The sham surgery introduced mild articular surface changes with spotty discoloration by Indian ink staining. The articular surfaces at the peripheral of the media condyle and the patella groove showed obvious discoloration indicated by the staining of Indian ink. The histopathology evaluation showed clear difference by the clustering chondrocytes in the articular cartilage from ACLT rabbit (H & E, 10X).

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- Availability of 10,000 non-human primates for research use.