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[\[PDF \(1354K\)\]](#) [\[References\]](#)**Structure and component alteration of rabbit Achilles tendon in tissue culture**Yoshinao HOSAKA¹⁾, Hiromi UEDA¹⁾, Tadatsugu YAMASAKI¹⁾, Daisuke SUZUKI²⁾, Naoya MATSUDA¹⁾ and Kazushige TAKEHANA¹⁾

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ABSTRACT

The aim of this study was to investigate alterations of cultured tendon tissues to determine whether tissue culture is a useful method for biological analyses of the tendon. Tendon tissues for tissue culture were isolated from Achilles tendons of rabbits. The tendon segments were placed one segment per well and incubated in growth medium consisting of Dullbecco's modified Eagle's medium supplemented with 5% fetal bovine serum at 37°C in a humidified atmosphere with 5% CO₂ for various periods. The alignment of collagen fibrils was preserved for 48 h, but tendon structure has disintegrated at 96 h. Alcian blue staining and gelatine zymography revealed that proteoglycan markedly diminished and that matrix metalloproteinase (MMPs) activity was upregulated sharply at 72 and 96 h. The ratio of collagen fibrils with large diameter had increased and the mean diameter and mass average diameter value had reached maximum at 48 h. The values then decreased and mean diameters at 72 and 96 h were significantly different from that at 48 h. At 96 h, the ratio of collagen fibrils with small diameters had increased and collagen fibrils with large diameters had disappeared. These findings indicate that structural alteration is possible to be induced by disintegration of collagen fibrils and disappearance of glycosaminoglycans from extracellular matrix (ECM), subsequent of upregulation of MMPs activity. Although the study period is limited, the tissue culture method is available for investigating cell-ECM



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