

## Action of the Epigallocatechin-3-gallate (EGCG) on the inflammation on tenocytes culture

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### Abstract

The Epigallocatechin-3-gallate (EGCG) is the most important compound of the green tea. This study analyzed tenocytes in vitro inflamed with TNF- $\alpha$  focusing the activity of metalloproteinases (MMP)-2, -8, and -9. On the medium cell, groups treated with EGCG showed lower quantities of MMP -2 and -9. Tenocyte zymography demonstrate presence of MMP -2, -8 and -9 in treated and non-treated groups. Nevertheless, inflamed groups display larger quantities of those MMPs. This study indicate improvement on the inflammatory process in groups treated with EGCG.

### Key words:

*Green tea, Metalloproteinases, TNF- $\alpha$*

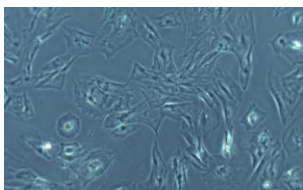
### Introduction

Tendons are connective tissues with few cells and poor vascularization. During an inflammatory process, there are an increase of the MMP-2 and -9 activity. MMPs are responsible for degradation and remodeling of the extracellular matrix. In this study, we investigate the effect of EGCG in culture of tenocytes subjected to an inflammatory process by TNF- $\alpha$ , considering mostly its effects on the MMPs activity.

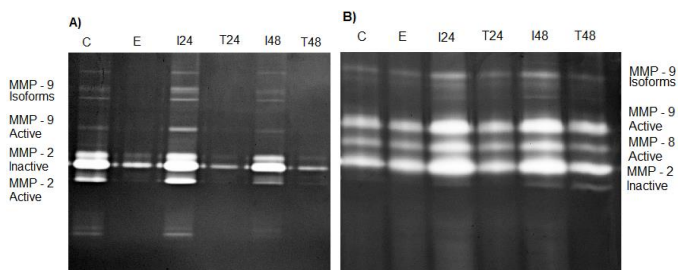
### Results and Discussion

For better understanding the effects of EGCG on inflammatory process induced by TNF -  $\alpha$ , a zymography process was made and analyzed.

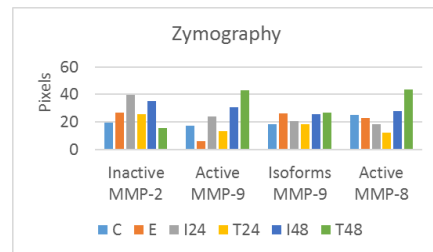
The zymography gels were made with samples of tenocytes and their medium.



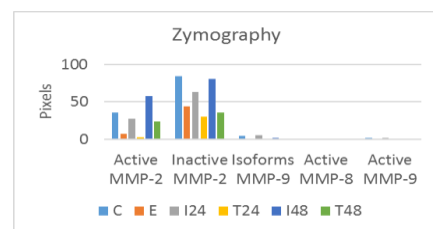
**Image 1.** Culture of tenocytes.



**Image 2.** Zymography of treated and non-treated groups. A) Medium cell. B) Tenocytes. The image "A" shows larger presence of MMP - 2 and -9 in groups non-treated with EGCG. Observe that inflamed groups present similar quantity of MMP -2 and -9 to the control group. On groups treated with EGCG, the MMP-2 inactive stands out. In the image B, all groups have noticeable amounts of active MMP -9, -8 and inactive MMP -2. However, these MMPs amounts are larger in inflamed groups than in the others.



**Image 3.** Densitometry MMPs of the tenocytes.



**Image 4.** Densitometry MMPs of the medium cell

**Table 1.** Groups.

C	Control
E	Treated with EGCG for 24 hours
I24	Inflamed with TNF- $\alpha$ for 24 hours
T24	Inflamed with TNF- $\alpha$ for 24 hours and treated with EGCG for 24 hours
I48	Inflamed with TNF- $\alpha$ for 48 hours
T48	Inflamed with TNF- $\alpha$ for 24 hours and treated with EGCG for 48 hours

Cellular Migration was tested. The results are being analyzed.

### Conclusions

The EGCG has an reverse effect on inflammatory process induced by TNF -  $\alpha$ . Medium cell of groups treated with EGCG showed lower presence of MMP-9 and active MMP-2. Inflamed tenocytes show higher amount of MMP -9, -8 and inactive MMP-2.

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