

# Biological effects and potential mechanisms of action of *Pistacia lentiscus* Chios mastic extract in Caco-2 cell model

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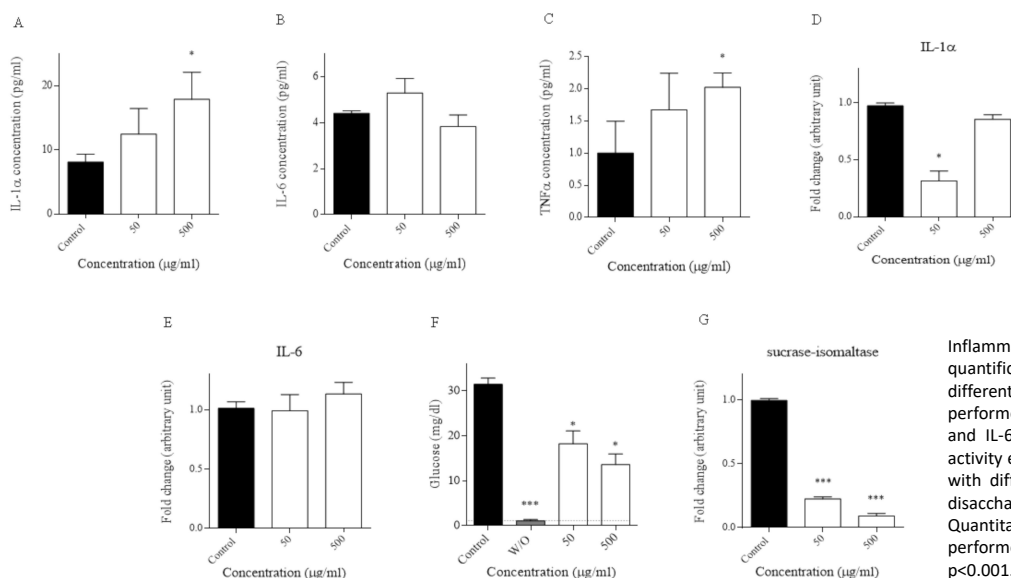
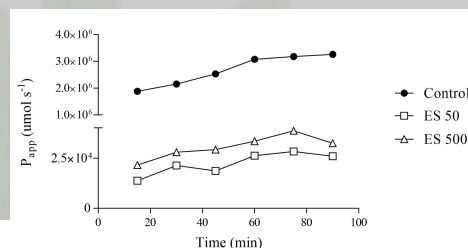
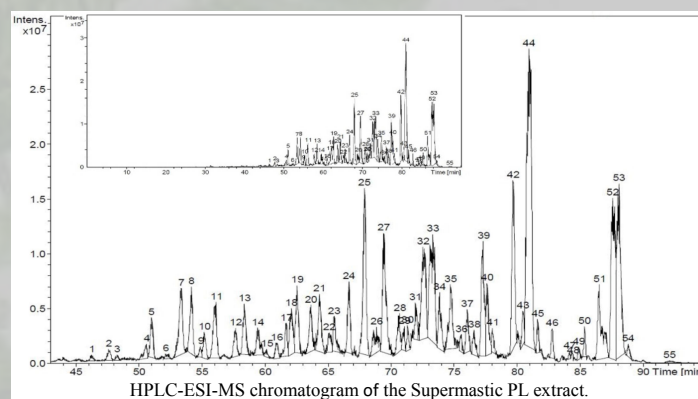
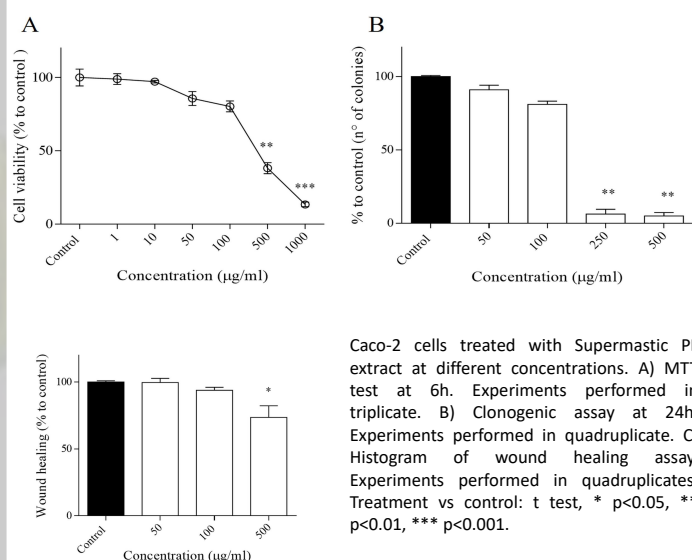
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**INTRODUCTION:** *Pistacia lentiscus* L. (PL) is an evergreen shrub of the family *Anacardiaceae* commonly present in the Mediterranean area especially in the Greek island of Chios where it is cultivated for its fragrant and aromatic resin. This resin is called *mastic gum* or *mastic* (known as the “tears of Chios”). In ethnomedicine, PL mastic has been used for more than 2500 years in Mediterranean basin to treat gastrointestinal diseases, such as gastralgia, peptic ulcer, dyspepsia, diarrhoea, stomach upsets, nausea (1). More recently PL has been reported to possess antimicrobial, anti-inflammatory, antioxidative, wound-healing, neuroprotective, antidiarrheal, anti-atherosclerotic, hypotensive, hypoglycemic, diuretic, anti-urolithiasis and anticancer effects (2-4).

**AIM:** to investigate *Pistacia lentiscus* extract effects at cellular level in a colon cell model (Caco-2)

We used a *Pistacia lentiscus* extract obtained from a patented extraction procedure that permits to have a raw material named “Supermastic” rich in triterpenes and with elimination of polyterpene polymers



Paracellular permeability assay in Caco-2 cells treated or untreated with different concentrations of Supermastic PL extract. All results (treatments vs control) are significantly different, p<0.01. Experiments performed in triplicates.

**Conflict of interest**  
The authors declare no conflict of interest

Inflammation and disaccharidase in Caco-2 cells. A-C) Interleukins quantification analysis in Caco-2 cells treated or untreated with different concentrations of Supermastic PL extract. Experiments performed in triplicates. D-E) Quantitative Real-time PCR for IL-1α and IL-6. Experiments performed in triplicates. F) Disaccharidase activity expressed as glucose generation in cells treated or untreated with different concentrations of Supermastic PL extract. W/O: no disaccharidase added. Experiments performed in duplicates. G) Quantitative Real-time PCR for sucrase-isomaltase. Experiments performed in triplicates. Treatment vs control: t-test, \* p<0.05, \*\*\* p<0.001.



Supermastic *Pistacia lentiscus* extract

## CONCLUSIONS

Biochemical and biological assays to study the mechanism of action

1. Supermastic PL extract showed no toxic effect
2. Pro-inflammatory cytokines did not increase
3. Potential role in glycaemic control
4. Barrier effect for protecting against biochemical and biological insults