

Effect of Olive Oil and Wine Extracts on IL-1 β induced Cytokines Secretion in Human Mesangial Cells.

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Glomerulosclerosis (GS) is characterized as an inflammatory disease. The pathogenic mechanisms include; dysregulation of lipid metabolism; injury of endothelium; production of inflammatory mediators, mesangial cell proliferation; intra and extracellular lipid accumulation and matrix production.

The mesangium occupies a central anatomical position in the glomerulus, and also plays an important regulatory role in inflammation-mediated glomerular diseases. Thus, mesangial cells have the potential to be activated by inflammatory mediators or to generate them. Among these mediators, cytokines occupy a crucial role leading to several actions. IL-6, IL-8, MCP-1 cause chemo-attraction / activation of inflammatory cells, PDGF, IL-1, IL-6 cause cell proliferation and TGF, IL-1 cause matrix production.

Several studies have revealed that the Mediterranean Diet could be beneficial for human health and its protective role in various diseases has been already established. Polar lipid extracts of olive oil (OPL), white wine (WWPL) and red wine (RWPL) contain anti-thrombotic and anti-inflammatory compounds that belong to the classes of phenolic and glyco- / phospho-lipids. The chemical structures of the most active ones have already been reported. Aim of this study was to examine the effects of the above extracts in the human mesangial cells (HMCL) cytokines network. For this purpose the IL-1 β -induced IL-6 and MCP-1 production from HMCL was investigated. IL-1 β (5 ng/mL) causes HMCL release of IL-6 and MCP-1 from the first hour. The maximum secretion of IL-6 was observed at 6h and sustained until 24h, while MCP-1 secretion was peaked at 6h and reduced in the initial levels within 24h. Diverse mechanisms seems to mediate the effect of OPL on IL-1 β -induced IL-6 and MCP-1 secretion since the co-incubation of OPL (0.002-0.2 microg/mL) with IL-1 β resulted in the enhancement of IL-6 secretion while pre-incubation of the cells with OPL resulted in the partial inhibition of IL-6 secretion and does not affect MCP-1 secretion. On the other hand, the wine extracts appear to have the opposite effect since the co-incubation of RWPL or WWPL (0.002-0.2 microg/mL) with IL-1 β resulted in inhibition of IL-6 and MCP-1 secretion. Pre-

incubation of the cells with RWPL or WWPL either had no effect or enhanced the secretion of IL-6 and MCP-1.

The above results indicate that IL-1 β induces the secretion of IL-6 and MCP-1 in HMCL. Olive oil and wine extracts could modulate IL-1 β -induced IL-6 and MCP-1 secretion from HMCL. However, due to their diverse effects on cytokine secretion further investigation is required in order to characterize their mode of action.

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