

CBD containing oil modulates an inflammatory activity of human monocytes

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Background: Cannabidiol (CBD) is known for its anti-inflammatory and pro-regenerative effects. Multiple studies are performed *in vitro* and *in vivo*. However, the toxicity and efficacy of specific CBD oil preparation formulated for the use on mucosal lesions was not evaluated. Therefore, we have tested an anti-inflammatory activity of proprietary CBD oil mix (Fitodenta) on human monocytes (cell line THP-1).

Material and methods.

Human monocytes (cell line THP-1) were cultured in RPMI medium with the addition of 10% fetal calf serum and antibiotics as described elsewhere. Cells were exposed to CBD-containing oil mix, carrier oil alone or dispersing agent ethanol (also added to the cultures). Effects were assessed after 24h.



Material and Methods:

Assays performed: CBD oil mix was tested for its inflammation regulatory capacity. Cells were culture conventionally or exposed to pro-inflammatory mediator interleukin-1beta (IL-1 β (1ng/ml)) and then treated with CBD mix. Control cells were exposed to carrier oil or ethanol (used as a dispersing agent).

Results

Two doses of CBD were used (based on literature search and pilot experiments), i.e. 1 and 5 μ g/ml.

Cell viability under the influence of CBD. Metabolic activity of THP-1 monocytes (**Figure 1**) was assessed daily for a period of few days by means of PrestoBlue method as described elsewhere. For comparison a viability of untreated cells, cells exposed to carrier oil or ethanol was investigated as well.

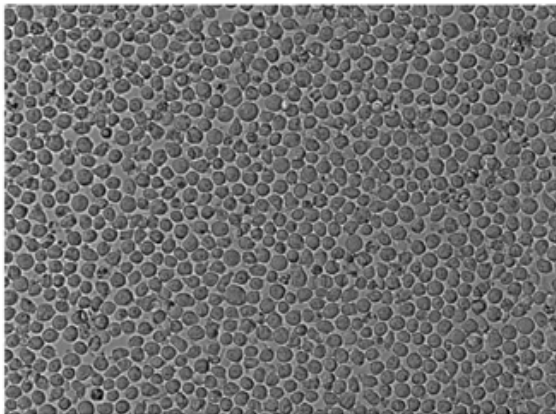


Figure 1. morphology of THP-1 cells.

PrestoBlue results demonstrate that there is no cytotoxic activity of any substances tested on the viability of THP-1 cells (results are not presented).

Quantification of secreted interleukins' (IL6 and IL8) levels

THP-1 were exposed to CBD oil together with IL-1 β (1ng/ml) or without it (**Figure 2**). CBD oil significantly reduced IL-6 and IL-8 production in IL-1 β (1ng/ml)-exposed THP-1 cells.

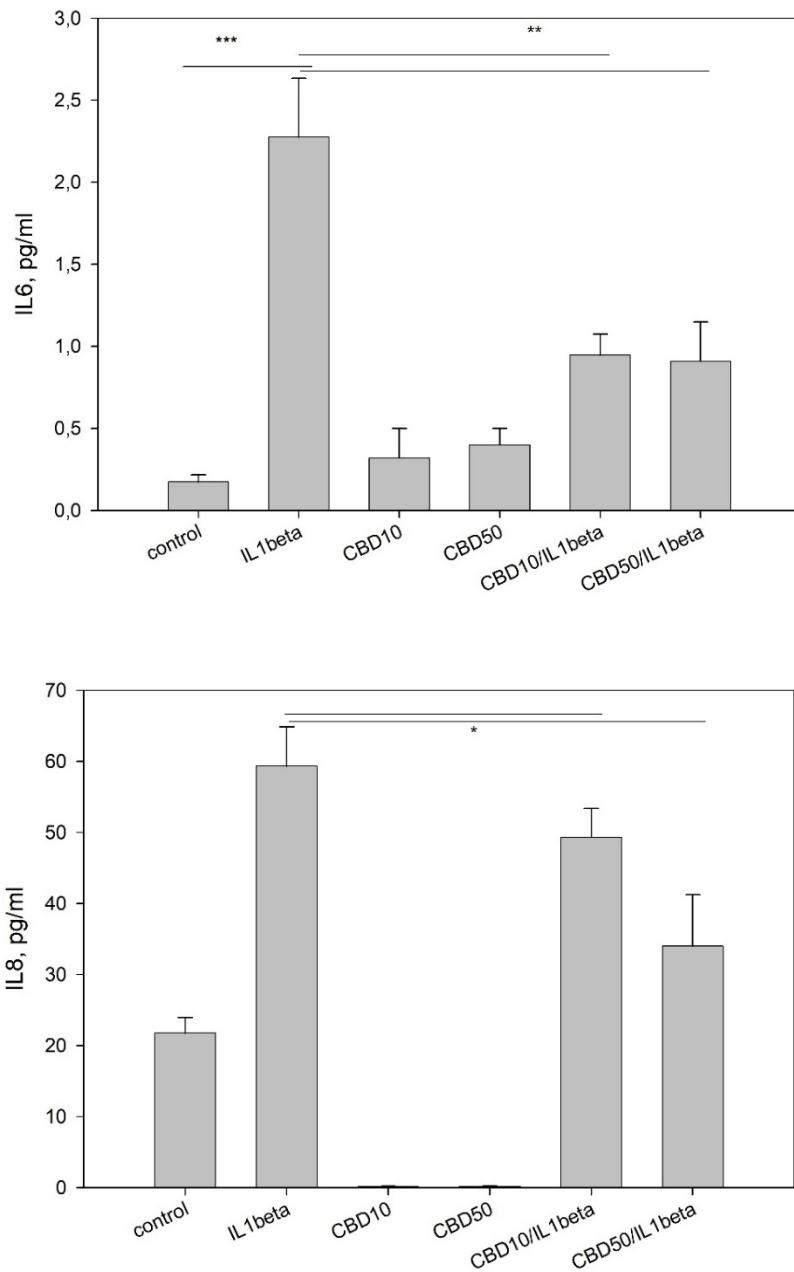


Figure 2. Levels of IL8 and IL6 secreted into THP-1 cell culture media and quantified by ELISA.

Conclusions:

1. Results show that CBD oil mix is not cytotoxic towards human monocyte cell line THP-1.
2. CBD oil mix significantly reduces acute (24h) pro-inflammatory activation of monocytes, i.e. IL6 and IL8 production is significantly upregulated upon exposure to IL-1 β , but CBD ameliorates this activation back to the control level when added together with IL-1 β .