

## Possible effects of using foods derived cannabinoids on inflammation in Alzheimer's disease

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One of the hallmarks in Alzheimer's disease (AD) is accumulation of beta-amyloid (A $\beta$ ) around neurons. Aggregate formation of A $\beta$  peptide induced neuro-inflammatory process which leads to glial cell activation such as astrocytes. In recent years, many studies show the potential positive effects of cannabinoids in various pathologies. In AD, the use of natural or synthetic cannabinoids is able to counteract the inflammatory effects and providing neuro-protection in the pathological conditions. Our group has shown inflammation in astrocytes in primary culture after A $\beta$  addition compared with control cells. Here we determined the action of cannabinoids on inflammation induced by A $\beta$  in astrocytes in culture. Protein expression levels were detected by ELISA and Western-blot techniques in astrocytes in primary culture treated with A $\beta$  and/or cannabinoids. Using A $\beta$  (5  $\mu$ M) during 24 h, an increase of pro-inflammatory mediators (TNF- $\alpha$  and IL-1 $\beta$ ), compared with control astrocytes was detected. Treatment with Win 55, 212-2 (10  $\mu$ M) produced increase of anti-inflammatory mediators (PPAR- $\gamma$ ) and decrease of pro-inflammatory mediators, such as TNF- $\alpha$  and IL-1 $\beta$ , protecting cells to the toxic effect of A $\beta$ . These results suggest that the use of cannabinoids is viable in the treatment of AD to recover from inflammation and oxidative stress induced by A $\beta$ . Future studies in patients with Alzheimer's disease will be developing with cannabinoids intake to attack oxidative stress and inflammation detected in those patients.

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