P-146 - N-ACETYL-L-CYSTEINE, TROLOX, AND ROSUVASTATIN PROTECT GLIAL CELLS EXPOSED TO HEXACOSANOIC ACID AGAINST INFLAMMATION, LIPID PEROXIDATION AND NITRATIVE STRESS

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**INTRODUCTION:** X-linked adrenoleukodystrophy (X-ALD) is a peroxisomal disorder caused by disfunction of the ABCD1 gene, which encodes a peroxisomal protein responsible for the transport of the very long-chain fatty acids from the cytosol into the peroxisome, to undergo β-oxidation. The major accumulated saturated fatty acids are hexacosanoic acid (C\textsubscript{26}: 0) and tetracosanoic acid (C\textsubscript{24}: 0) in tissues and body fluids. Recent evidence shows that oxidative and nitrative stress seems to be related with pathophysiology of X-ALD and many studies are associating antioxidants as an adjuvant therapy, since there is no completely satisfactory treatment for this neurogenetic disorder.

**OBJECTIVES:** Considering that glial cells are widely used in studies of protective mechanisms against neuronal oxidative stress, we investigated whether C\textsubscript{26}: 0, incorporated in a lecithin vesicle, was capable to induce oxidative/nitrative damages and inflammation to glial cells and if the compounds N-acetyl-l-cysteine (NAC), trolox (TRO), and rosuvastatin (RSV) were able to protect cells against C\textsubscript{26}: 0-induced damages.

**MATERIALS AND METHODS:** C\textsubscript{26}: 0 was incorporated in lecithin vesicle by sonication. Glial cells were cultured in DMEM and at confluence, the vesicles containing lecithin and C\textsubscript{26}: 0 were added. A pre-treatment was performed for 2h at 37°C with NAC (100 μM), RSV (5 μM), and TRO (75 μM). Supernatants were collected for analysis. IL-1β was measured by an Invitrogen ELISA kit, NO equivalents and isoprostanes was detected by a Cayman kit.

**RESULTS:** It was observed that glial cells exposed to C\textsubscript{26}: 0 presented increased NO levels, high IL-1β levels, and increased isoprostane levels, compared to native glial cells without C\textsubscript{26}: 0 exposure. Furthermore, NAC, TRO, and RSV were capable to mitigate these damages caused by the C\textsubscript{26}: 0 in glial cells.

**DISCUSSION AND CONCLUSION:** Our data demonstrate, for the first time in literature, that C\textsubscript{26}: 0, by itself, induced in glial cells culture: lipid peroxidation, nitrative stress and inflammation. Furthermore, we verified that NAC, TRO, and RSV were capable to attenuate damages caused by C\textsubscript{26}: 0 in glial cells. The ability of these compounds to exert protective effects in glial cell culture might be of relevance as an adjuvant treatment for X-ALD, since there is still no completely satisfactory therapy for this disorder.