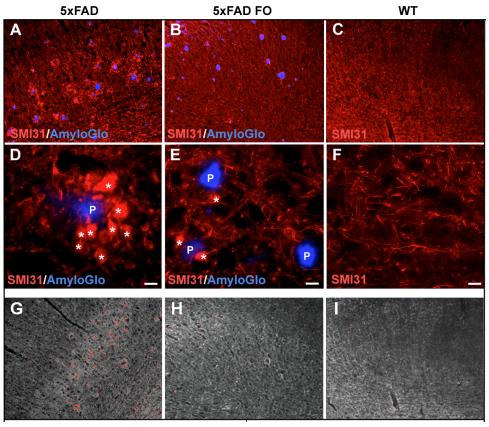
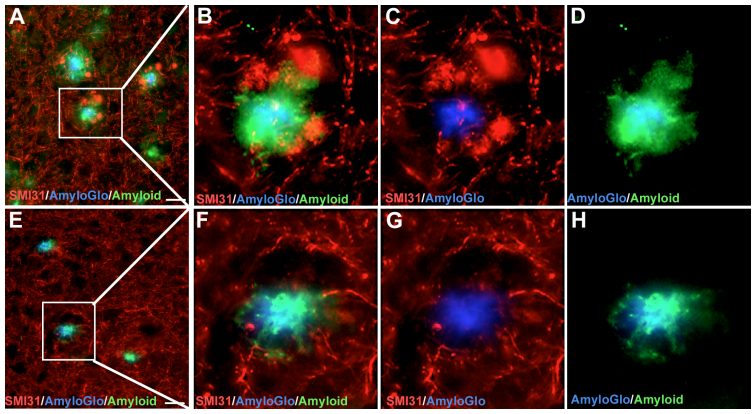
Enhancement of microglial/macrophage barrier and prevention of neuritic dystrophy by short-term fish oil (FO) supplementation studied in presymptomatic stage of Alzheimer's disease mouse model using Biosensis Amylo-Glo Staining Kit

Common neuropathological characteristics of Alzheimer's disease (AD) are dystrophic neurites (DNs) formation and microglia/macrophage activation and subsequent neuroinflammation.

Jović M *et al.** studied the effects of short-term fish oil (omega-3 fatty acid supplements) on DNs formation, tau hyperphosphorylation, Amyloid-beta peptide 1-42 (Aβ42) levels and microglial/macrophage response to AD pathology young 5xFAD mice, a mouse model of AD. Much of this study utilized our unique Amylo-Glo RTD™ Amyloid Plaque Tracing Reagent to stain plaques in beautiful double & triple co-labelling experiments (Image 1 & 2 respectively below). AG co-labelled along side various antibodies including Iba-1 and phosphorylated neurofilaments, and amyloid beta protein in this study.

*Jović M *et al.* (2019). Short-term fish oil supplementation applied in presymptomatic stage of Alzheimer's disease enhances microglial/macrophage barrier and prevents neuritic dystrophy in parietal cortex of 5xFAD mouse model. PLoS One. 2019 May 16;14(5):e0216726. PMID: 31095617





Left image: FO supplementation ameliorates neuritic dystrophy through suppression of abnormal tau hyperphosphorilation in the parietal cortex of 5xFAD mice. (A and D) Axonal dystrophies (arrows) surrounding amyloid plaques (P) in 4-month-old 5xFAD mice; (B and E) Brains of FO-supplemented 5xFAD mice showing significant suppression of dystrophic axons around plaques; (C and F) wild type mice showing absence of dystrophic neurites (G-I). Figure courtesy of Jović M *et al.* 2019. **Right image:** Decreased Aβ42 halo overlaps with the decreased incidence of DNs in FO treated mice. (A-D) Double staining of untreated 5xFAD mice brain sections with the 4g8 and SMI31 antibodies revealed that the areas with higher incidence of DNs display the greater total Aβ halo around the plaques (AmyloGlo+). (E-H) In the FO-treated 5xFAD animals the decreased surface of the Aβ halo overlaps with the decreased incidence of swollen, dystrophic neurites. Figure courtesy of Jović M *et al.* 2019

Amylo-Glo Ready-to-Dilute (RTD) Tracing Reagent (TR-300-AG) is a unique UV excitable and exceptional bright stain suitable for double- and triple-staining experiments in fresh, frozen and formalin-fixed tissues. Also available from Biosensis: Amylo-Glo RTD Staining Reagent with Ethidium Bromide counterstain (TR-400-AG).

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