

## CORIOLUS VERSICOLOR BIOMASS INCREASES HIPPOCAMPAL DENTATE GYRUS NEWLY-GENERATED NEURONS COMPLEXITY IN MICE

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Background: Hippocampal adult neurogenesis has been considered to be a relevant contributor for brain cognitive reserve, which refers to the ability of the brain to be resilient to neuropathology throughout life. *Coriolus versicolor* (CV- Mycology Research Laboratories Ltd, Luton, UK), a common healthful mushroom, has been receiving increasing attention by its anti-inflammatory, antioxidant and immunomodulatory properties, including in the hippocampus. Methods: Herein, we evaluated whether CV biomass oral administration for 2.5 months enhances hippocampal neurogenic reserve in normal physiological conditions. Two and a half-month-old wild-type mice (C57BL/6 × 129 background, male) were randomly divided in two experimental groups (n=10 per group): i) Saline-administered and ii) CV-administered (200 mg/kg bw, suspended in saline). Hippocampal dentate gyrus (DG) granular cell layer (GCL) and subgranular zone (SGZ) volumes and number, and dendritic complexity of hippocampal newly-generated neurons were quantified. Statistical significance was determined using One-way ANOVA with repeated measures followed by Bonferroni post hoc test (Scholl Analysis), unpaired student's t test or non-parametric Mann-Whitney test. p-values < 0.05 were considered statistically significant. Results: No differences were observed in the volume of GCL and SGZ layers and in the number of newly-generated neurons of controls and CV-administered mice. However, Scholl analysis revealed that CV biomass administration promoted an increase in the arborization of the dendritic tree of hippocampal immature neurons, which was more evident in newly-generated neurons with dendrites reaching the DG outer and medial molecular layer (O/MML). This increase in complexity was visible in the radiuses 80 to 110 micrometers, corresponding to dendritic branches located at the DG inner molecular layer (p < 0.05). This increased dendritic complexity was associated with a significant increment in total dendrites volume (p < 0.001).

Conclusions: Overall, our data suggest that CV biomass has a positive effect in the hippocampal neurogenic reserve. We unveil a so far unexplored neurogenic potential of CV oral supplementation, which emerges as a possible preventive strategy for different neurological conditions.

Financial support: Mycology Research Laboratories, Ltd; CENTRO-01-0145-FEDER-000012 HealthyAging2020 and CENTRO-01-0145-FEDER-000008 - BrainHealth 2020; FCT: POCI-01-0145-FEDER-007440 and Strategic Project 2015- UID/NEU/04539/2013. E.F. is a holder of a FCT postdoctoral grant (SFRH/BPD/86551/2012).