IMMUNOMODULATORY POTENTIAL OF CHRYSIN AND ISOLIQUIRITIGENIN FLAVONOIDS IN HUMAN MACROPHAGES

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ABSTRACT

Background: Flavonoids are bioactive compounds that can modulate immune responses. Macrophages are innate immune cells that have essential functions, such as antigen presentation, inflammation, tissue repair, and immunomodulation. They play crucial roles in the immunopathology of inflammatory diseases and have become key targets in immune therapy research. **Objectives:** The aim of this work was to investigate the immunomodulatory potential of the flavonoids chrysin (CHRY) and isoliquiritigenin (ISL) in human macrophages stimulated *in vitro* (Figure 1). **Methods:** Initially, THP-1 monocytes cell lineage were differentiated into macrophages with PMA (50 nM), followed by incubation for 24 h. After differentiation, the macrophages were washed and incubated with PMA-free medium for 24 h. To confirm differentiation, immunophenotyping was performed by labeling the CD14 and CD11b markers via flow cytometry. The cytotoxicity of the flavonoids was assessed via the MTT assay. The macrophages were incubated with 25 or 50 µM for 48 h. The immunomodulatory activities of CHRY and ISL were assessed by treating macrophages with LPS (100 ng/mL) and IFNγ (20 ng/mL) under different experimental conditions. The expression of HLA-DR and CD86 in the cell culture supernatant was evaluated by multiparametric flow cytometry, and the quantification of cytokines in the cell culture supernatant was assessed via the cytometric bead array (CBA) methodology. **Results and discussion:** Neither of the compounds affected cell viability at the 25 or 50 µM. Treatment with CHRY increased CD86 expression 12 h after treatment and decreased HLA-DR expression 24 h later. On the other hand, ISL treatment did not reduce CD86 or HLA-DR expression under the conditions tested. However, both flavonoids decreased the IL-6 levels in the supernatant after 12 and 24 hours of treatment but did not reduce the TNF-α levels. **Conclusion:** These results enhance the understanding of the immunomodulatory activity of the flavonoids CHRY and ISL in human macrophages, paving the way for the development of new immunological interventions for the treatment of inflammatory disorders. **Financial support:** CNPq, FAPEAL, CAPES.

Figure 1. Assessment of the immunomodulatory potential of natural flavonoids in THP-1 cells.