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Development of Complementary Therapy Approaches to TNF-alpha Inhibitors in Inflammatory Bowel Disease Models

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THESIS ABSTRACT

In the current thesis, the protective roles of myricetin and berberine in the development of GIS cancers induced by long-term use and increasing the effectiveness of IFX used in the treatment of IBD were investigated. Accordingly, the interactions of myricetin and berberine alone and together with IFX were determined in HT-29 cells for which an *in-vitro* model of IBD was created. *in-vivo* DSS model representing UC; an *in-vivo* TNBS model representing CD was created. In the models created, the role of myricetin was investigated by clinical, histopathological and molecular evaluations. In HT-29, the protective role of myricetin in suppressing neoplastic characters that may occur as a result of long-term use of IFX in the treatment of IBD was understood by evaluating the invasion and colony formation capabilities of cells after IFX treatment with myricetin.

APPLICATION AREAS OF THE THESIS RESULTS

The present findings provide elucidation of the mechanism of formation and development of IBD, which is very common nowadays. It contributes to the literature with the first application of the combined application of myricetin, a flavonoid, and IFX, which is used as an anti-TNF-a agent in the clinic, in the UC model, and also with the first application of myricetin, both alone and in combination with IFX, in the CD model. The current findings show that myricetin is a potential bioactive compound in increasing the efficacy of IFX therapy, which is widely used in both UC and CD subtypes of IBD, reducing clinical harmful side effects, and can be used in the creation of new therapeutic approaches in the treatment of IBD.

ACADEMIC ACTIVITIES

Thesis projects: THIZ-2022-748, TGA-2022-790
Mine Camlibel, Sena Ferah, Melis Ercelik, Cagla Tekin, Tuncay Yilmazlar, Ozgen Işık, Berrin Tunca. Investigation of the potential of using myricetin in combination with infliximab in an in-vitro model of inflammatory bowel disease. 5TH International Eurasian Conference On Biological And Chemical Sciences (EURASIANBIOCHEM 2022). 23-25 November 2022. Ankara, Turkiye.

KEY WORDS *(at least 5 words)*

- ✓ Inflammatory bowel disease (IBD)
- ✓ Myricetin
- ✓ TNF-alfa inhibitor
- ✓ *in-vivo* IBD models
- ✓ Colorectal cancer

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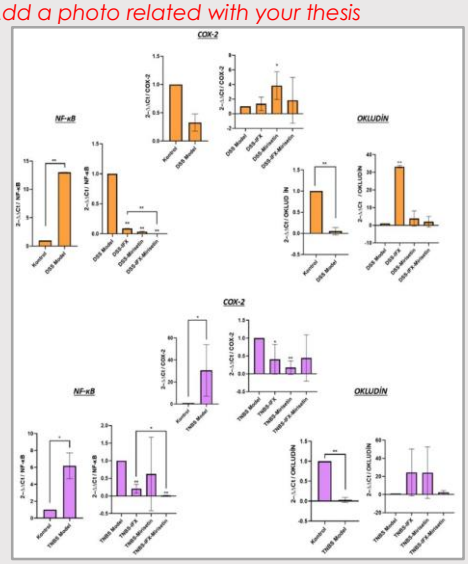

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