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INVESTIGATING THE PROTEOMIC PROFILE OF HT-29 COLON CANCER CELLS AFTER *LACTOBACILLUS KEFIRI* SGL 13 EXPOSURE USING THE SWATH METHOD

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Despite some studies revealed that kefir acts on different cancers such as colorectal cancer [1], the proteomic changes that occur in the colon cancer cells remain to be explored.
In this study, the proteomic analysis was combined with determination of kefir characteristics (e.g. adhesion capacity, gastrointestinal and antibiotics resistances), in order to confirm its use as a probiotic. Therefore, a label free strategy based on SWATH-MS was applied to investigate the proteomic profile of HT-29 cells after exposure for 24 hours to a specific strain of *Lactobacillus kefiri* named SGL 13. We identified a total of 60 differentially expressed proteins in HT-29 cells, among which most are located into the extracellular exosome, playing important/crucial roles in translation and cell adhesion, as indicated by the enrichment analysis. The eIF2 and retinoid X receptor activation pathways appeared to be correlated with the anti-tumoral effect of SGL 13. Immunoblot analysis showed an increase in Bax, and a decrease in caspase 3 and mutant p53, and ELISA assay revealed inhibition of IL-8 secretion from HT-29 cells stimulated with LPS upon SGL 13 treatment, suggesting pro-apoptotic and anti-inflammatory properties of kefir.
In conclusion the results of this study, the first of its kind using co-culture of kefir and colon cancer cells, demonstrated that *L. kefiri* SGL 13 possesses probiotic potency and contribute to elucidate the molecular mechanisms involved in the *L. kefiri*-colon cancer cell interactions. This study represents the first ever analysis based on SWATH for the molecular characterization of the effects induced by kefir on colon cancer cells. The results obtain are relevant also by a technical point of view because they show the potentialities of an investigation done by SWATH-MS also to study the effects of probiotics.

References

[1] Hendler R., Zhang, Y.: Probiotics in the Treatment of Colorectal Cancer. Medicines (Basel). 2018 Sep 7;5(3).