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Explore anti-inflammatory action of lactobacillus plantarum (Lb. plantarum) WLPLO4 on human breast cancer cells (MCF7)

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Statement of the Problem: MCF7 cells have been used as model of study in breast cancer research since decades now. Physiological 17 β -estradiol (E2) has been linked to the etiology of breast cancer via different signaling pathways involving estrogen receptor types (ERs) but no expression change is seen for ER(s) with change in physiological E2 in vitro in our study. Interestingly various anti-inflammatory receptor expressions were established in MCF7 that are known to play negative role in breast cancer. LAB (lactic acid bacteria) house in humans and produces various proteins like L anti-biotin e.g. Nisin and plantaracin that have great potential in medical applications and food preservation industry. L anti-biotin are used in pharmaceutical application in human health for inflammatory and allergies and is used in peptic ulcer treatment.

Methodology & Theoretical Orientation: Lb. plantarum WLPLO4 strain has been isolated from breast milk with tolerance to bile salt and acid conditions alike in tumor environment. Previously Lb. plantarum WLPLO4 strain has shown decrease in pro-inflammatory cytokines (IL-6, IL-8 and TNF α) and increased anti-inflammatory cytokines IL-10 in Caco-2 cells. So far, we have established gene expression of hormone receptors and inflammatory mediator receptors involved in breast cancer progression in response to physiological E2 on MCF7 using RT-qPCR.

Conclusion & Significance: MCF-7 is established for expression for anti-inflammatory mediators receptor involved in negative breast cancer regulation while our future research in exploring relation between Lb. plantarum WLPLO4 strain on MCF7 will help in understanding if there exists any novel mechanism of regulation of anti-inflammatory mediator receptors in breast cancer as it is to be occur rarely in women during later stages of pregnancy and breast feeding.

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