



## Lactoferrin: Possible use as a therapeutic agent in breast cancer?

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Lactoferrin (LF) is an iron-binding glycoprotein that can be found in saliva, tears, blood, neutrophils and milk, suggesting a role in the non-specific defence against invading pathogens. Additionally, several physiological roles have been attributed to LF, namely regulation of iron homeostasis, host defence against infection and inflammation, regulation of cellular growth, and differentiation and protection against cancer development and metastasis. These findings have suggested LF's great potential therapeutic use in cancer disease prevention and/or treatment both *in vitro* and *in vivo*. Nevertheless, the underlying mechanisms for such inhibition are not fully understood and generate contradictory theories [1]. In this work, we studied the potential of LF against breast cancer *in vitro*, using T47D and HS578T cell lines as models. The aims were to study the protein effect on apoptosis, cellular viability, proliferation and migration. LF was found to be responsible for a decrease in the cell viability for both cell lines, probably by influencing the genetic expression of several key components of the cell cycle. Additionally, an increase in the cellular death by apoptosis was observed, probably due to its influence on FAS genetic expression. A protein concentration of 1g/L and an exposure time of 48 hours conducted to a decrease in the cellular proliferation rates and migration for both cell lines. In summary, LF was found to intervene in the most important steps of cancer development. Therefore, and due to its cheapness, safety and availability, it represents a promising therapeutic agent to be used in the future.

[1] Rodrigues LR, Teixeira JA, Schmitt F, Paulsson M, Lindmark Måsson H, "Lactoferrin and cancer disease prevention", *Crit. Rev. Food Sci. Nutr.* (2009) **49(3)**:1-15.