

BENEFICIAL EFFECT OF A PEPTIDE DERIVED FROM GASTROINTESTINAL DIGESTION OF BUFFALO (BUBALUS BUBALIS) MOZZARELLA CHEESE ON INTESTINAL INFLAMMATION

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Introduction: Inflammatory bowel diseases (IBDs) are relapsing and lifelong disorders characterized by chronic inflammation, which induces a disruption of the intestinal barrier. Buffalo (*Bubalus bubalis*) milk is a source of many bioactive peptides that may have a role in preventing chronic disorders. Recently, a peptide identified by buffalo milk-derived products (MBCP) has been able to reduce oxidative stress in intestinal epithelial cells. Here, we evaluated the effect of MBCP on experimental intestinal inflammation.

Methods: The anti-inflammatory effect of MBCP was explored on the dinitrobenzene sulfonic acid (DNBS) model of murine colitis, by assessing colon weight/colon length ratio, colonic damage and intestinal permeability (by using the FITC-Dextran method and immunofluorescence analysis for E-cadherin and β -catenin). Furthermore, the role of MBCP on adherent junctions (AJs) was assessed by localizing the E-cadherin and β -catenin in Caco-2 cells stimulated by TNF- α (by using the confocal microscopy).

Results: MBCP reduced inflammation and intestinal permeability in colon tissues of DNBS-treated mice. Moreover, MBCP, at non-cytotoxic concentrations, induced the adherence-junction organization, modulated the nuclear factor (NF)- κ B pathway and decreased the intestinal permeability of Caco-2 cells stimulated with TNF- α .

Discussion and conclusions: MBCP exerts an anti-inflammatory effect in intestinal epithelial cells and in a murine IBD model. It could be considered as a possible nutraceutical for the management of intestinal inflammation.