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ISOLATION AND CHARACTERIZATION OF LACTOFERRIN PEPTIDES WITH STIMULATORY EFFECT ON OSTEOBLAST PROLIFERATION

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Lactoferrin is reported to be a potential food protein with osteogenic activity. However, the activity of lactoferrin peptides is questionable. In the present study, we isolated and characterized peptides from lactoferrin with stimulatory effect on osteoblast proliferation. Peptides from the lactoferrin pepsin hydrolysate were purified using cation-exchange and gel-filtration chromatography. Effects of different hydrolysates and peptides on the proliferation of osteoblast MC3T3-E1 cells were compared by MTT assay. Results showed that fraction P5-a from Superdex Peptide 10/300 GL gel chromatography showed better activity. Tricine-sodium dodecyl sulfate polyacrylamide gel electrophoresis and high-performance liquid chromatography coupled to electrospray ionization tandem mass spectrometry confirmed that two peptides components of P5-a corresponded to fractions of 20–78 and 191–277 amino acids in Bos taurus lactoferrin molecule (GI: 221706349). These results will provide some theoretical and practical data for the preparation and application of osteogenic peptides in functional food industry.

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