

# Effect of C-terminal Amino Acid in Cytoprotective Potential of Novel Buffalo Casein Derived Bioactive Peptide in Oxidative Stress

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## Background and purpose:

*In today's life, daily work stress overburdened the cellular metabolism results in to oxidative stress related disorders such as cancer, myocardial inflammation, diabetes and aging via extreme production of free radicals. So, bioactive peptides from natural sources with short half life and antioxidative cytoprotective effect are gaining much attention.*

## Material and methods:

*Among the four bioactive peptides, previously isolated from buffalo casein protein by pepsin-trypsin digestion, Val-Leu-Pro-Val-Pro-Glu-Lys (VLPVPQK) was found to possess the highest anti-oxidative potential by ABTS method. Also, a short fragment, Val-Leu-Pro-Val-Pro (VLPVP) is generated during its transepithelial transport study in Caco-2 monolayer cells. In the present investigation, we evaluated the comparative anti-oxidative potential of the bioactive peptides by ABTS and ORAC (Oxygen Radical Absorbance Capacity) method and, its cytoprotective enduring effects in H<sub>2</sub>O<sub>2</sub>-induced in-vitro oxidative stress fibroblast model system by MTT.*

## Result and conclusion

*Parent bioactive peptide, VLPVPQK displayed antioxidative property by both ABTS and ORAC method significantly. But its fragment, VLPVP showed anti-oxidative activity by ABTS in an irregular manner but no such anti-oxidative activity was observed by ORAC. Although peptide, VLPVPQK enhanced fibroblast cells survivability very significantly but no such enhancement in survivability was observed in case of VLPVP. Altogether, our results indicated that, these are C-terminal amino acid important for cytoprotective effects of peptide, VLPVPQK which are absent in VLPVP.*