Enhancement of Antioxidant Activity in Milk Protein Concentrate Hydrolysates via Enzymatic Hydrolysis Using Streptomyces griseus Protease

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Peptides play an important role in the alive cell activity. Additionally, some of them have antioxidant capacity and they can be produced from milk proteins. Milk protein



concentrate (MPC) is a valuable source of nutrients and bioactive peptides which have an antioxidant activity.

Objectives

This study investigates enzymatic hydrolysis of milk protein concentrate (MPC) using protease from *Streptomyces griseus* (PSG) type XIV to enhance its antioxidant properties.



Different incubation times (24, 48, and 72 hours) and PSG concentrations (55.5, 111, and 165.5 μg)

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Antioxidant Activity: Hydrolysates from higher enzyme concentrations and longer incubation times show the highest antioxidant activity, significantly greater than MPC without enzyme treatment. MPC boiled with buffer showed some activity, while untreated MPC had negligible activity.

Synergistic Effect: Both increased enzyme concentration and longer incubation time contribute to higher antioxidant activity, likely due to more bioactive peptides being formed.





Results and Discussion

Incubation Time and Enzyme Concentration: Longer incubation times and higher PSG concentrations enhance the hydrolysis of MPC, with a smear or ladder pattern observed in gel electrophoresis, indicating progressive peptide breakdown.

<u>Conclusion</u>

Enzymatic hydrolysis of MPC with PSG enhances antioxidant activity. Higher enzyme concentrations and longer incubation times generate bioactive peptides, making MPC hydrolysates a promising ingredient for functional foods and nutraceuticals.

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