

Studies on the Biological Actions of Some Nitrogenous Whey Products

Mahmoud Abdel-Hamid Mohamed

Dr. Soad Hassan Taha, Dr. Abd El-Gawad Imam Abou-Dawoud and Dr. Mahmoud Zaki Sitohy

Abstract

This study was conducted to investigate the biological actions of some nitrogenous whey products namely, whey protein isolate, whey protein hydrolysate, α -lactalbumin, β -lactoglobulin, lactoferrin and glycomacropeptide .

Experiments were carried out to: i) study antiviral activity of native and esterified whey protein fractions against tomato yellow leaf curl virus (TYLCV) and influenza A virus subtype H5N1; ii) study the hepatoprotective effect of whey protein products against liver steatosis in rats .

The obtained results indicated that the antiviral activity of the used whey protein fractions against TYLCV can be arranged in a descending order as follows: lactoferrin (native or modified form) > native α -lactalbumin > modified β -lactoglobulin > modified α -lactalbumin = native β -lactoglobulin.

Esterification of whey protein fractions has further enhanced their antiviral activity against H5N1 in a concentration dependent manner. In response to protein concentration going from 20 to 80 μ g/ml, Met- α -LA was the lowest active antiviral protein, while both Met-BLG and Met-LF reached the maximum antiviral influence when the protein concentration was 80 μ g/ml.

Rat feeding experiments revealed that oral administration of whey protein products reduced the level of aspartate&alanine aminotransferase (ALT& AST) and the level of malondialdehyde in liver, increased the level of liver glutathione and enhanced liver histology comparing with the infected control.

Keywords: Whey proteins; Esterification; H5N1; TYLCV; Steatosis.