DOI : 10.5958/2277-8934.2016.00005.9 *Vol 23 No 1, p 33-40*

ENZYMATIC HYDROLYSIS OF CAMEL MILK PROTEINS AND ITS ANTIOXIDANT PROPERTIES

Devendra Kumar[2], Manish Kumar Chatli[1], Raghvendar Singh[2], Nitin Mehta[1] and Pavan Kumar[1]

[1]Department of Livestock Products Technology, College of Veterinary Science, GADVASU, Ludhiana, Punjab, India

[2]National Research Centre on Camel, Bikaner, Rajasthan, India

ABSTRACT

Camel milk proteins were hydrolysed with alcalase, α-chymotrypsin and papain and hydrolysates were assessed for antioxidant activity. Non-fat camel milk (NFCM) powder was reconstituted (5% TS) in phosphate buffer and enzymes were added at a ratio of 1:100 (enzyme: substrate). Hydrolysis was carried out at 55°C for Alcalase and Papain, and 37°C for α-Chymotrypsin for 6 hours and samples were drawn at 2h interval. The hydrolysates were analysed for change in pH, degree of hydrolysis (DH) and antioxidant activities *viz.* 2, 2′ azino bis (3 ethylbenzthiazoline 6 sulphonic acid) (ABTS), 2,2′ diphenyl 1 picrylhydrazyl (DPPH) and ferric reducing antioxidant power assay (FRAP). With the progress of hydrolysis time, pH of the hydrolysates were decreased and higher rate was observed for alcalase. The DH increased significantly ($p<0.05$) upto 6 h on hydrolysis with alcalase and papain, whereas upto 4h for chymotrypsin. In SDS-PAGE, the disappearance of major protein bands in hydrolysates samples confirm hydrolysis and production of low molecular weight peptides. The antioxidant activity was assessed by ABTS, DPPH and FRAP assay, increased significantly ($p<0.05$) with the increase in hydrolysis time and DH. The hydrolysis carried by chymotrypsin exhibited higher antioxidant activity as compared to alcalase and papain. The results suggested that camel milk proteins could be used as natural source of protein to produce hydrolysates with antioxidant activities and can be used for human consumption and as ingredient in nutraceutical and pharmaceuticals and also in health oriented food products.

Key words: Antioxidant activity, camel milk, enzymatic hydrolysis, protein hydrolysate