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Title:

Simulated infant in-vitro gastrointestinal digestion of sheep and goat milk colostrum: A potential ingredient for infant nutrition

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Abstract: (Your abstract must use **Normal style** and must fit in this box. Your abstract should be no longer than 300 words. The box will 'expand' over 2 pages as you add text into it.)

Preparation of Your Abstract

1. The title should be as brief as possible but long enough to indicate clearly the nature of the study. Capitalise the first letter of the first word **ONLY** (place names excluded). No full stop at the end.

2. Abstracts should state briefly and clearly the purpose, methods, results and conclusions of the work.

Introduction: Clearly state the purpose of the abstract

Methods: Describe your selection of observations or experimental subjects clearly

Results: Present your results in a logical sequence

Discussion: Emphasize new and important aspects of the study and conclusions that are drawn from them

This study aims to compare the protein digestion properties of skimmed sheep and goat colostrum under simulated infant in-vitro gastrointestinal digestion. The protein digestibility was characterized using the degree of hydrolysis, sodium dodecyl sulfate-polyacrylamide gel electrophoresis, and reverse-phase ultra-performance liquid chromatography (RP-UPLC). The degree of protein hydrolysis increased significantly after the digestion as compared to the undigested colostrum samples assessed in terms of free amino nitrogen content $\mu\text{gNH}_3/\text{g}$. Furthermore, the degree of protein hydrolysis of sheep colostrum (14482.88 ± 167.77) was comparatively higher than goat colostrum (10857.44 ± 173.47) after intestinal digestion. Also, sheep colostrum showed better antioxidant properties based on the DPPH and ABTS radical scavenging properties compared to goat colostrum. LC-MS/MS technique was employed to identify the peptide sequence generated from both sheep and goat colostrum after the gastric and intestinal phase digestion. The interaction of these peptides was also studied 2FLU (Kelch-Neh2 Complex) protein. A total of 51 and 39 peptides were selected after the gastric digestion of sheep and goat colostrum, respectively. Whereas a sum of 24 and 28 peptides were selected after the intestinal digestion of sheep and goat colostrum, respectively. The selected peptides gained the score of 0.8 or more on the peptide ranker. The identified peptides were also analysed using in-silico and bioinformatics approach for toxicity, antibacterial, and allergenicity prediction. All the peptides were non-toxic except LPPPPPPFPGAPGIPPPPPG and GSACADCC after the gastric digestion and QGPPGPPGPPGP and APPPGAGRAGP generated after the intestinal digestion of goat colostrum. Also, peptides GPPAGPRP and EAQENAITLFCCLLSRLATRRVIT generated after the gastric digestion of sheep colostrum were found to be toxic. However, none of the peptides generated from both sheep and goat colostrum showed allergenicity. The outcome of the study suggests its further evaluation to be used for the fortification of infant milk formula