



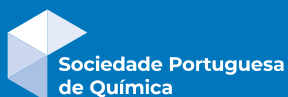
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## Sequential injection chromatographic system for the expeditious molecular weight screening in hydrolysates

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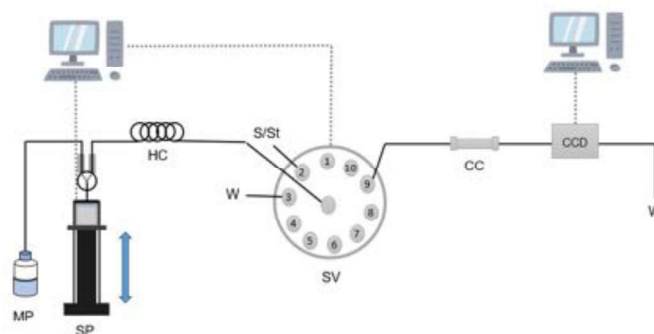
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According to the regulations of the European Union, the use of additives in animal nutrition must be rigorously assessed to ensure safety, efficacy, and quality. These guidelines emphasize the importance of reliable and efficient analytical tools for characterizing bioactive compounds in feed formulation [1].

Currently, the evaluation of proteins is predominantly performed using high-performance liquid chromatography (HPLC). This is a well-established technique known for its robustness, but on the other hand, it is associated with high operational costs, lengthy analysis times, and complex instrumentation. In response to these limitations, this work presents the development of a sequential injection analysis (SIA) system incorporating a laboratory-made chromatographic column, specifically designed to determine compounds across a range of molecular weights, with particular focus on species below 10 kDa (**Figure 1**).

Integrating the column into the SIA circuit enables selective separation and quantification of low-molecular-weight compounds, significantly enhancing analytical throughput and overall process efficiency. The sequential injection chromatography offers distinct advantages, including improved precision, automation, and reduced reagent consumption [2]. This method approach provides a cost-effective, miniaturized, and automated solution with strong potential for real-time control in industrial production environments. This is particularly relevant in the animal feed manufacturing sector, where accurate monitoring of peptides, amino acids, and other bioactive molecules under 10 kDa is essential to ensure nutritional quality, regulatory compliance, and optimized formulation strategies.



**Fig. 1.** Sequential injection analysis manifold for the molecular weight screening in hydrolysates; MP, Mobile phase; SP, Syringe pump 5 mL; HC, Holding coil 3 m; S/St, Sample/Standard; SV, Selection valve; CC, Chromatographic column; CCD, UV-Vis detector; W, waste.

### Acknowledgments

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### References

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- [2] P. Chocholouš, P. Solich, D. Satínský, *Anal. Chim. Acta*, 600 (2007) 129.