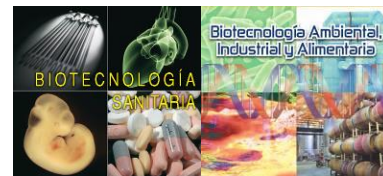

Poster

Analysys of lactose-free samples by chromatographic methods



David Guerrero Collante (1, 2), Maria del Mar González Pérez(1), Menta Ballesteros(2)

(1) Departamento de Cromatografía/Laboratorios Microal S.L , Avda. Castilleja de la Cuesta, 5 P.I.B.O, 41110 Bollullos de la Mitacion, Sevilla

(2) Departamento de Biología Molecular e Ingeniería Bioquímica. Carretera de Utrera Km 1. Universidad Pablo de Olavide 41013 Sevilla

Tutor académico: Maria de la Menta Ballestero Martín

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ABSTRACT

Currently, lactose-free or lactose-free products are gaining importance in the daily consumption habits of many lactose intolerant people. Approximately 70% of the adult population in the world suffers from lactose intolerance due to the absence of lactase, which is caused by the absence of lactase in some people. [1] For this reason, the food information provided to consumers regarding the use of some ingredients that can cause allergies or intolerances, such as lactose, must be adequate so that they can make the most appropriate choice for their consumption. The Ministry of Health differentiates between lactose-free and low-lactose products, the difference lying in the amount of measurable residual lactose. Thus, when the amount of this lactose is less than 1%, it is considered a low-lactose product and when it is less than 0.01%, it is considered a lactose-free product [2]. To ensure these detection levels, testing laboratories must use sufficiently sensitive and accurate methods. Conventionally, detection of lactose in milk and milk products has been carried out using different methods such as gravimetry, polarimetry, enzymatic methods or methods based on high performance liquid chromatography with refractive index detector (HPLC-IR, High Performance Liquid Chromatography). However, when high sensitivity and precision are required, other analytical techniques such as Ultra High Performance Liquid Chromatography (UHPLC- MS/MS) or High Performance Anion Exchange Chromatography with Pulsed Amperometric Detection (HPAEC-PAD), which is also being used for the estimation of residual lactose with very high sensitivity and selectivity, should be used [3]. Therefore, in this Master Thesis we propose to evaluate the amount of lactose in different dairy products (cheese and milk) by HPLC-MS/MS depending on the type of sample, its fat content or its state at room temperature (liquid or solid). Initial results show high recoveries for all the tests performed.

REFERENCES

- [1] Di Costanzo, M., Berni Canani R. (2018). Lactose Intolerance: Common Misunderstandings. FullText - Annals of Nutrition and Metabolism 20198, Volume. 73, Suppl. 4 Karger Publishers. <https://doi.org/10.1159/000493669>
- [2] Agencia Española de Consumo, Seguridad Alimentaria y Nutrición. Subdirección General de Promoción de la Seguridad Alimentaria.(2015). Condiciones de empleo de las menciones: “sin lactosa” y “bajo contenido en lactosa” 2015 <https://lactosa.org/wp-content/uploads/2017/02/Nota-aecosan.pdf>
- [3] Priyanka Singh Rao, Payal Singh, Vivek Sharma, Sumit Arora, Traditional analytical approaches for lactose residues determination in lactose hydrolysed milks: A review LWT 2021, Volume 151, 112069. <https://doi.org/10.1016/j.lwt.2021.112069>