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Analytical Methods

Development and in house validation of a new thermogravimetric method for water content analysis in soft brown sugarGiseli Ducat^a, Maria L. Felsner^a, Pedro R. da Costa Neto^b, Sueli P. Quináia^a[Show more](#)**Choose an option to locate/access this article:**Check if you have access
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Highlights

- The determination of water content in soft brown sugar by TG/DTA is investigated.
- The factorial design results suggest that thermogravimetric method was optimized.
- For the validation of thermogravimetry different statistical tests was applied.
- Thermogravimetry presented good precision and accuracy for water content analysis.
- Loss on drying is not appropriate because it depends on the chemical composition.

Abstract

Recently the use of brown sugar has increased due to its nutritional characteristics, thus requiring a more rigid quality control. The development of a method for water content analysis in soft brown sugar is carried out for the first time by TG/DTA with application of different statistical tests. The results of the optimization study suggest that heating rates of 5 °C min⁻¹ and an alumina sample holder improve the efficiency of the drying process. The validation study showed that thermo gravimetry presents good accuracy and precision for water content analysis in soft brown sugar samples. This technique offers advantages over other analytical methods as it does not use toxic and costly reagents or solvents, it does not need any sample preparation, and it allows the identification of the temperature at which water is completely eliminated in relation to other volatile degradation products. This is an important advantage over the official method (loss on drying).

Keywords

Soft brown sugar; Water content analysis; Thermogravimetry; Karl Fischer; Factorial design; Validation method

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