

# Qualification of powdered gelatin agar by NIR spectroscopy



NIR spectroscopy used to identify optimal lots of powdered gelatin agar.

## Measurement made easy

Gelatin agar

## Overview

Agar is a mixture of polysaccharidea widely used in food, chemical and pharmaceutical industries for its jelly-like structure. Among a variety of purposes, it can be used as a solid substrate for culture media, as a laxative, as a substituent to gelatin or as a preservative for fruits.

As it is obtained from different species of red algae, its quality can vary from lot to lot.

The objective of this feasibility is to determine if NIR spectroscopy can be used to identify optimal and sub-optimal lots of powdered gelatin agar.

## Application details

### Method

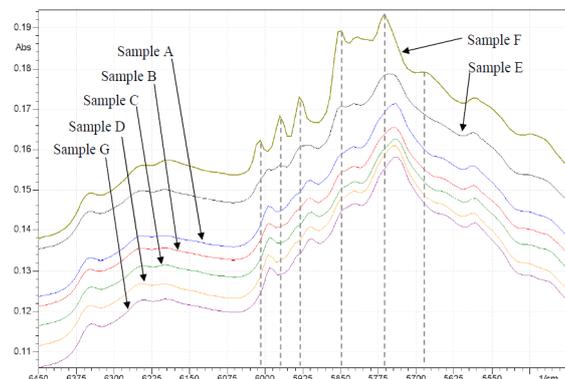
- Instrument: MB3600
- Detector: InAs, TE-cooled
- Sampling technique: rotating powder sampling accessory (ACC-101)
- Analysis temperature: room temperature
- Resolution: 16 cm<sup>-1</sup>
- Number of scans: 128
- Chemometrics: principal component analysis

01 NIR spectra  
(from 5400-6450  $\text{cm}^{-1}$ )  
of the samples

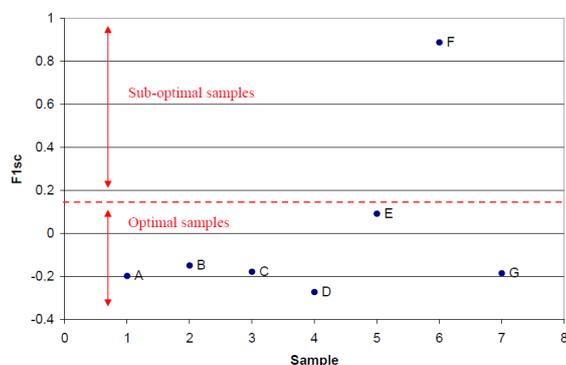
02 Factor 1 scores  
values (F1sc) of all  
samples obtained  
with the PCA study

03 MB3600 spectrometer

## Results



01



02

Differences in the chemical signature could be observed on the spectra. Optimal and sub-optimal samples could be differentiated using a principal component analysis (PCA) model using one factor. Sample acceptability discrimination was based on scores.

## Conclusion

ABB NIR spectrometers coupled with PCA are a very powerful combination to discriminate between acceptable and to-be-rejected lots of samples made of chemically similar material.

It also offers the possibility to routinely control the quality of the incoming or produced material by determining limits that will discriminate between good or bad material lots. Limits can be adjusted according to the required reproductibility of material lots.

Determining what can be causing sample variability would have requested a better knowledge of the agar structure, chemical composition, and maintenance and storage procedures.



03

ABB, Inc.  
Measurement & Analytics  
3400, rue Pierre-Arduin  
Québec (Québec) G1P 0B2  
Canada  
Tel: +1 418-877-2944  
1 800 858-3847 (North America)  
Email: ftir@ca.abb.com

[abb.com/analytical](http://abb.com/analytical)

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB.  
©ABB, 2022