

Determination of Maltodextrin in Pharmaceutical and Food Products

Randy Benton, Metrohm-Peak, Inc.

Maltodextrin is an easily digested carbohydrate made from cornstarch, and is composed of glucose subunits linked together, which makes it easy for the body to assimilate and use for energy. Maltodextrin may be derived from a number of sources however, when listed on food sold in the U.S., it must be made from corn or potato, per FDA regulation. Maltodextrin is used as filler in many foods and has one of the highest glycemic ratings given. This product is also used as a binder in non-sugar substitutes, giving them their powdery appearance and texture. Maltodextrin has also been used as a training supplement that increases the release of insulin, and consequently the uptake of nutrients such as amino acids. Being a polymer of glucose, maltodextrin can cause a dramatic rise in blood sugar levels in a short period of time. Individuals who have *Diabetes Mellitus* must carefully monitor their intake of maltodextrin.

Experimental Conditions

A Metrohm advanced ion chromatography system equipped with two model 818 IC pumps, Metrohm Spark Triathlon autosampler, 817 bioscan pulsed amperometric detector, and 830 IC interface was used for the analysis. A high-pressure gradient system was used for separation of maltodextrin. Data acquisition and processing were performed with Metrohm IC-Net 2.3 software. Bioscan temperature was controlled at 320 °C. The column employed for analysis was the Metrosep Carb-1 analytical column (250 mm × 4 mm). The eluent used for the gradient was: Eluent A, 50 mM sodium hydroxide, Eluent B 50 mM sodium hydroxide + 500 mM sodium acetate. The injection volume was 100 µL. Flow rate used was 1 mL/min.

Results and Discussion

Analysis of carbohydrates using pulsed amperometric detection has been available for a number of years. One factor limiting this technique was the ability to reproducibly detect complex carbohydrates with a high degree of polymerization (DP). This application note addresses the detection of maltodextrin, which has a DP of about 40. Figure 1 demonstrates the ability of the instrument to perform the separation as well as the ability to reproduce the analysis.

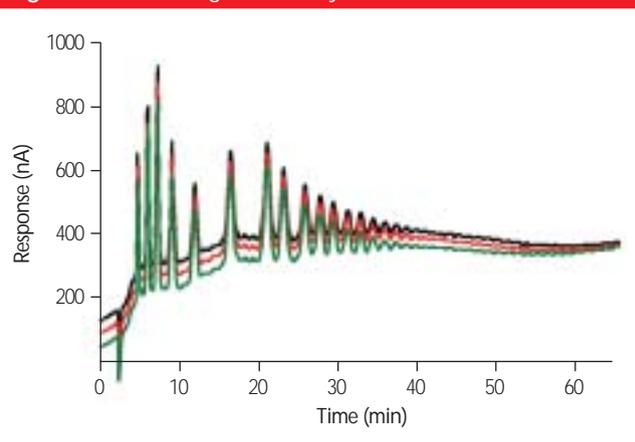
Conclusion

This application note demonstrates that a qualitative, analytically precise method has been developed for determination of maltodextrin. Maltodextrin is among the many carbohydrates, from monosaccharides to polysaccharides, that can be analyzed using the Metrohm bioscan pulsed amperometric detector.

References

(1) Metrohm Application Works AW-US6-0069-042004.

Figure 1: Chromatogram overlay of maltodextrin.



 **Metrohm**

Metrohm Ltd
Oberdorfstr. 68

CH-9101 Herisau, Switzerland

tel. +41 71 353 8585 fax +41 71 353 8901

e-mail info@metrohm.com

website: www.metrohm.com