

SEC Analysis of Food Flavorings

Application Note

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Introduction

Many modern foodstuffs contain flavorings, which are added to enhance the taste of food. Often complex mixtures of chemicals are required to give the specified flavor. Analyzing and controlling the relative amounts of these flavorings is a vital part of the quality control process ensuring a consistency of product. A sample of flavoring that contained several low molecular weight maltodextrins and a high molecular weight starch acting as a carrier was analyzed by SEC. The performance of flavoring of this type depends upon the relative distribution of maltodextrin components within the sample. Therefore, for the analysis of the flavoring, columns were selected, which focus on the resolution of the low molecular weight maltodextrin but exclude the less important starch from the analysis. Aqueous SEC is an excellent tool for characterizing flavorings, making use of Agilent PL aquagel-OH 30 8 μ m columns and carried out in buffer at pH 7 using RI detection. PL aquagel-OH columns operate across a wide range of eluent conditions for high performance analysis of analytes with neutral, ionic and hydrophobic moieties, singly or combined. Pullulan polysaccharide narrow standards were used to generate the calibration.



Conditions

Samples: Maltodextrin flavorings in starch
Columns: 2 x PL aquagel-OH 30 8 μm , 300 x 7.5 mm (p/n PL1120-6830)
Eluent: 0.2 M NaNO_3 + 0.01 M NaH_2PO_4 pH 7
Flow Rate: 1.0 mL/min
Detection: RI

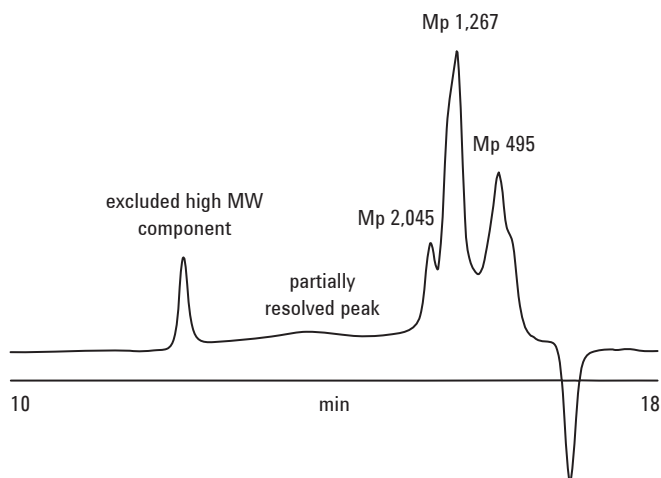


Figure 1. Raw data chromatogram of the food additive

Results and Discussion

Figure 1 shows a chromatogram of the food additive. Some of the starch component has been partially resolved at high molecular weight but the major proportion has been excluded, giving rise to the sharp peak at the exclusion limit of the column set (at approximately nine minutes). The maltodextrin distribution of the flavoring has been separated from the starch and resolved into three peaks with several smaller shoulders - the Mp values of the major components relative to polysaccharide are shown. Quantification of the relative peak heights of the individual maltodextrin components would allow quality control of the flavoring.

Conclusion

Using SEC with PL aquagel-OH columns allows investigators to focus on low molecular weight maltodextrins in the presence of high molecular weight starches, greatly facilitating quality control of these important food flavorings.

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