

Polymer-based Ion Exclusion Columns for Food Analysis

In this application note the main advantages and the high performance of the pure polymer-based columns SUGAR SH and RSpak KC for ion exclusion chromatography are discussed. In addition, different applications, i.e. the separation of saccharides and organic acids in food, of both types are described.

We introduce two pure polymer-based column series which can be used for the analysis of food, biochemical and also natural products.

SUGAR SH series

Polymer particles (i.e. styrene divinylbenzene copolymer) with 6 µm particle size are modified with sulfo functional groups and used as stationary phase. A simultaneous separation of saccharides and organic acids can be achieved by this HPLC column via a combination of size and ion exclusion mode. In general, 100% water as environmental friendly mobile phase can be used. Furthermore, the addition of sulfuric and phosphoric acid to the eluent is possible to avoid for example adsorption of alkalis on the packing material. The availability of different pore sizes enables also the separation of oligosaccharides mainly via size exclusion mode.

RSpak KC series

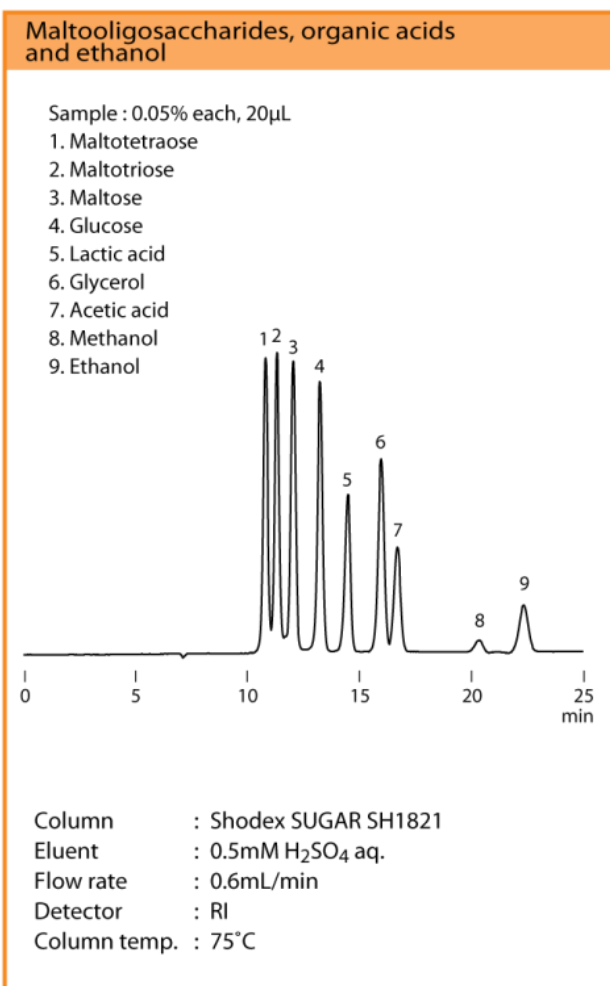
This type of column is also based on 6 µm polymer particles (i.e. styrene divinylbenzene copolymer) modified with sulfo functional groups, but has compared to the SUGAR SH series a different cross-linked network which offer the

ideal environment to separate beside the standard organic acids, also such with hydrophobic moieties via ion exclusion and reversed phase mode. Considering the latter separation technique and the chemical stability of the polymer-based packing material the usage of ethanol or acetonitrile (max. 20%) in the mobile phase is also possible. Further application fields of this type of column are the analysis of water-soluble organics such as alcohols, aldehydes and nitriles.

Shodex is specialized in polymer-based packing material for high performance liquid chromatography. The modern columns SUGAR SH and RSpak KC combine all advantages of polymeric columns. They are used for applications in food analysis considering especially the simultaneous analysis of saccharides and organic acids.

Maltooligosaccharides, organic acids and ethanol (SUGAR SH series)

The SUGAR SH columns offer different pore sizes which makes it possible to separate not only monosaccharides but also oligosaccharides via size exclusion chromatography. In addition, they are suitable for the determination of organic acids and alcohols. The results show excellent retention time reproducibility and a high recovery rate.



Organic acids and vitamin C in fruit juice (RSpak KC series)

Due to the strict regulations in food industry, the exact quantification of each ingredient of the products is of high importance within the quality control. Therefore, reliable analytical methods are necessary to ensure the high quality of the products. Our RSpak KC column is suitable to monitor beside all essential organic acids also water-soluble vitamins (e.g. vitamin C) in fruit juices.

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