Oligosaccharides purity at Megazyme

We are asked from time to time for information regarding our oligosaccharide purity specifications. Our FAQs on oligosaccharides have recently been updated, and we wanted to share the latest information with you to help you support customers in your territory.

Q. How is the purity of oligosaccharides determined?

A. At Megazyme, oligosaccharide purities stated is based On the best analytical method available for analysis of the oligosaccharide.

Methods we typically employ are HPLC, HPAEC-PAD, TLC and in some cases NMR. We normally state purities on a “greater than (>)” basis in increments of 5% so >85%, >90% of >95%.

This is in line with most other chemical vendors (sometimes other vendors state purities as “minimum 95%”). Precise wt/wt % purity (eg. 96.4%) is never stated because in order to claim an exact purity value, one has to ensure that all of the impurities are identified and can be accounted for. In the case of oligosaccharides common impurities are other sugars (different DP, different linkages), but also moisture, inorganic salts and ash that would come from the production process.

At Megazyme we do not routinely measure moisture or ash content in our oligosaccharides. We do not perform elemental analysis and we are not in a position to characterise every unidentified impurity present. As such, the vast majority of Megazyme’s oligosaccharide products are supplied as freeze-dried powders and are packed following specific carbohydrate quantification assays that ensure sugar content exceeds the quantity (in mg) stated on the bottle by 5-10%.

HPAEC-PAD, in the absence of authentic standards for every trace impurity present, is not a quantitative analytical technique due to the significant variation observed in response factors across all oligosaccharides. We normally use HPLC % peak area to determine oligosaccharide purity. Where possible, we also use HPAEC-PAD and/or TLC qualitatively to help inform and if necessary, modify our purity specification.

We tend to be conservative with our purity specifications because in some instances we cannot be 100% certain that the peak we integrate on HPLC belongs solely to the oligosaccharide product. For this reason, Megazyme’s oligosaccharides can be used as standards but are not 'certified standards'. Certified standards are normally very expensive products that are sold in tiny quantities because have gone through extensive analysis and certification. Certified standards of most of Megazyme’s oligosaccharide products are not commercially available. Furthermore, our oligosaccharide products normally have the highest purity that is commercially available!

In the case of some of our oligosaccharides, our HPLC peak integration would indicate a purity which is higher than that stated on the bottle, however the fact that we see smaller impurities in the more sensitive but non-quantitative HPAEC-PAD analysis may lead us to adjust the purity specification to a more conservative value which we state on the bottle.

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