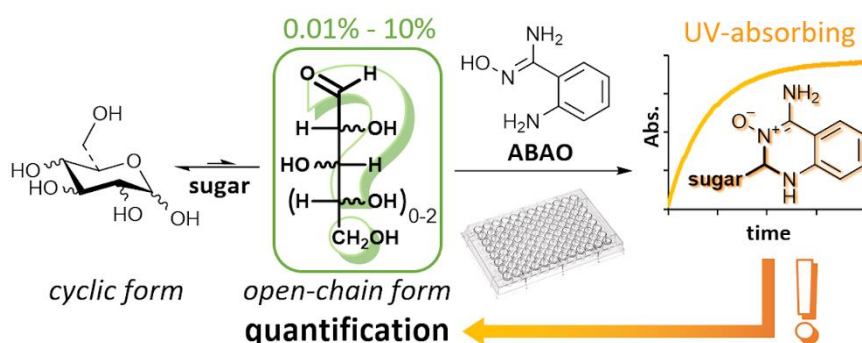


Sweet Applications of Heterocycles – Facile Quantification of Aldehyde Content in Sugars employing 2-Aminobenzamide oximes (ABAOs)

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Sugars take a special place within heterocycles: Their hemiacetal moiety leads to equilibration between various cyclic forms and the aldehyde open-chain structure. Reactivity of this aldehyde species is limited by its availability, with a substantial range among different sugars, but its concentration is usually too small to be readily determined. For this purpose, we have developed a facile kinetic assay based on the adduct formation with aldehyde selective 2-aminobenzamide oxime (ABAO)¹ yielding a strongly UV-active quinazoline-derivative. We validated the assay with all parent hexoses and pentoses, exhibiting a high degree of consistency with literature data usually determined via substantially more elaborate protocols.² Therewith, we evaluated the relevance of the open chain content on specific synthetic problems and could structurally expand its applicability towards the analysis of oxidized starches. Subsequently, we aimed at developing the ABAO-assay platform further towards additional data content and ventured into qualitative determination of the stereochemistry of aldoses based on the reaction with Fluor-labelled ABAOs and ¹⁹F-NMR analysis.

Literature:

1. Kitov P. I., Derda R. et al., *J. Am. Chem. Soc.* **2014**, 136, 8149-52.
2. Kalaus H., Stanetty C. et al., *Eur. J. Org. Chem.* **2021**, 2021, 2589 - 2593.