**Methyl esterification patterns of commercial and chemically modified  pectins**

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Recently, evidence has been found that physical and health properties of pectin are highly dependent on its chemical structure. Typical characteristics of pectins include level and distribution of methyl-esters and molecular weight. These properties may not only arise from the level of methyl esterification but also on specific methyl-esterification patterns. However, determining the methyl ester distribution of pectins and creating pectins with an desired pattern of methyl esterification is challenging. In this study we aim to fully characterize and modify pectins before testing these pectins for their bioactivity.

To reveal the methyl-ester distribution patterns in pectins, enzymatic fingerprinting is applied, using a combined endo-polygalacturonase (PG) and pectin lyase (PL) treatment. This method allowed us to develop new quantitative parameters, such as degree of blockiness (DB) degree of hydrolysis by PG (DHPG) and degree of hydrolysis by PL (DHPL). The ratio of these parameters reveal further differences between pectins with similar characteristics. Orange pectins were modified chemically to yield highly esterified pectins. Both re-esterified and starting pectins were de-esterified to desired methyl esterification levels using alkali. After enzymatic fingerprinting all the pectins analysed showed a distinct methyl esterification pattern as judged form the descriptive parameters.

*References:*

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