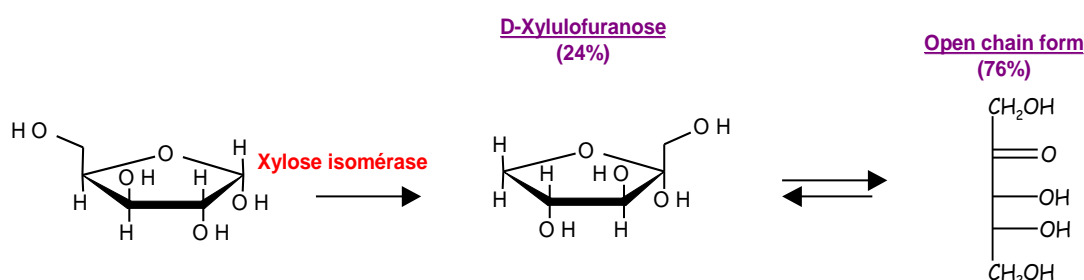


## A Fast and Selective HPLC Determination of Ulose Formation during Enzymatic Isomerisation of Pentose Rich Syrups.

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Xylose, and arabinose rich syrups obtained by hydrolysis of poorly developed ubiquitous agro-industrial by-products such as wheat bran represent a large potential as fermentation substrates in the production of second generation biofuels (1). Previous studies have demonstrated the requirement of a preliminary ulose isomerisation of pentoses in the fermentation process ; the transformation of arabinose and xylose present in these syrup into the corresponding ketoses using immobilised isomerases thus producing a very effective fermentation medium. (2). Existing protocols to analyse the isomerisation rate, such as the carbazol test (3) or the resorcinol method (4) do poorly on concentrated syrups containing a mixture of various types of aldoses, especially at low and medium ulose concentrations. In order to closely monitor the action of the isomerase on the sugar mixture we developed a new fast and selective high performance liquid chromatographic (HPLC) determination of the produced uloses, directly in the concentrated complex carbohydrate mixtures (5). This method uses the UV absorption specificity of the open-chain ketose form at 210 nm. The test is linear up to a concentration of 20 g/L ketose even in the presence of 50 g/L D-xylose or L-arabinose. The sensitivity is 0.5 g/L for D-xylulose and L-ribulose.



**Fig :** Configurationnal representaions of the major cyclic form of carbohydrates in water at 25°C. Reactions catalyzed by arabinose and xylose isomerase. (Lichtenthaler, 2002).

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