

IDD Publication #11

Haigh, B, Piotrowski M, and Litchfield J: (1988) **Analysis of non-enzymatically glycated albumin peptide: A novel LC/MS glycation assay.** Diabetes 47, S1, A370

The non-enzymatic glycation of an albumin peptide was studied by LC/MS without hydrolysis or chemical derivatization, both of which can result in inaccurate quantitation due to side reactions. The synthetic peptide (KQTAL) used as substrate mimics the preferentially glycated site (in vivo) of glycoalbumin (lysine 525). Following the incubation of peptide with carbohydrate, analysis is performed by direct injection of an incubation aliquot on LC/MS. Ions for both native and glycated peptide are quantified. The extent of glycation of peptide incubated with 125mM glucose in 200mM phosphate buffer, pH 7.4, or sodium bicarbonate buffer, pH 8.3, increased with time over 7 days to 5% and 9% respectively. Ribose glycated the peptide more efficiently, reaching greater than 20% after 7 days. The peptide exhibits a concentration dependent increase in glycation by glucose and ribose. Our results show the development of an in vitro peptide glycation model assay which requires minimal manipulation, and offers structural information by LC/MS chemical analysis. Our assay quantitatively measures glycation of peptides for studying the effects of inhibitors on the Maillard reaction.