

## Skin autofluorescence and glycemic variability.

**Diabetes Technol Ther. 2010 Jul;12(7):581-5.**

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**Background:** Accumulation of advanced glycation end products (AGEs) is accelerated during glycemic and oxidative stress and is an important predictor of complications in diabetes mellitus (DM).

**Study Design:** Here we both review and present original data on the relationship between skin autofluorescence (SAF), a noninvasive measure of AGEs, and short- and intermediate-term glycemic variations.

**Results:** Acute changes in glucose levels during an oral glucose tolerance test in 56 persons with varying degrees of glucose tolerance did not influence SAF. AGE-rich meals result in a transient postprandial rise in SAF of 10% 2-4 h later. This could not be attributed to meal-induced glycemic changes and is probably caused by the AGE content of the meal. In type 1 DM major intermediate-term improvements of glycemic control as depicted by multiple hemoglobin A1c (HbA1c) measurements were associated with lower skin AGE levels. In a well-controlled, stable type 2 DM cohort, only a weak correlation was found between SAF and HbA1c. In both studies skin AGE/SAF levels predicted complications of diabetes with an accuracy superior to that of HbA1c. SAF has also been proposed as a new tool in diagnosing impaired glucose tolerance (IGT) and DM. It proved to be more sensitive than either fasting glucose or HbA1c.

**Conclusions:** SAF is not influenced by short-term glycemic variations. AGE-rich meals may, however, cause a transient rise postprandially. There is a weak correlation between SAF or skin AGEs and current or time-integrated HbA1c levels. SAF has strong added value in risk prediction of complications of diabetes and is a promising tool for early detection of diabetes and IGT.

PMID: 20597834 [PubMed - in process]