

# Serum advanced glycation end-products and their soluble receptor as potential new biomarkers in systemic lupus erythematosus

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## Background and goals

It has been postulated that advanced glycation end-products (AGEs) and their soluble receptor (sRAGE) could play a relevant role as inducers in the chronic inflammatory pathway in various conditions; among them, in immune-mediated diseases such as systemic lupus erythematosus (SLE). However, previous studies show conflicting results about their association with SLE characteristics and their usefulness as disease biomarkers.

## Objectives

To quantify serum AGEs and sRAGE levels and study their association with various disease parameters to clarify their potential as new biomarkers in SLE.

## Results

Figures 1 and 2 show the associations between the different serum AGEs and sRAGE with SLE characteristics. We have found several associations that have never been described previously. Pentosidine (Fig1a) was strongly associated with pulmonary manifestations (shrinking lung syndrome and lupus pneumonitis), while CEL (Fig1b-e) and CML (Fig2a-d) were associated with several indexes or characteristics related to activity or prognosis like anti-dsDNA antibodies, IL-6 levels, longer disease duration, non-Caucasian ethnicities or the accumulated number of manifestations throughout the disease. Concerning sRAGE (Fig2e-h), there is

## Methods

Multiple demographic and clinical characteristics of the 122 SLE patients who signed the informed consent were recorded. AGEs and sRAGE were measured through ELISA according to the manufacturer instructions. Associations of pentosidine with demographic and clinical data, indexes of activity, accrual damage, and patient reported outcomes were analyzed through multiple lineal regression models, while associations of the rest of AGEs and sRAGE (non-normal) were analyzed using both an OLS regression model and a GML. All were adjusted for confounders based on previous analyses or previously reported factors.

some previously published evidence that has found lower levels in cases of more severe disease, especially in lupus nephritis. We found that lower levels were associated with male gender (known factor for more severe disease), while higher levels were with photosensitivity. Treatment with bDMARDs or mycophenolic acid were also related to higher sRAGE levels, maybe traducing the impact of treatments on modulating inflammation, which is a topic that has not been studied up to now.

Figure 1: Pentosidine and CEL statistically significant associations with SLE

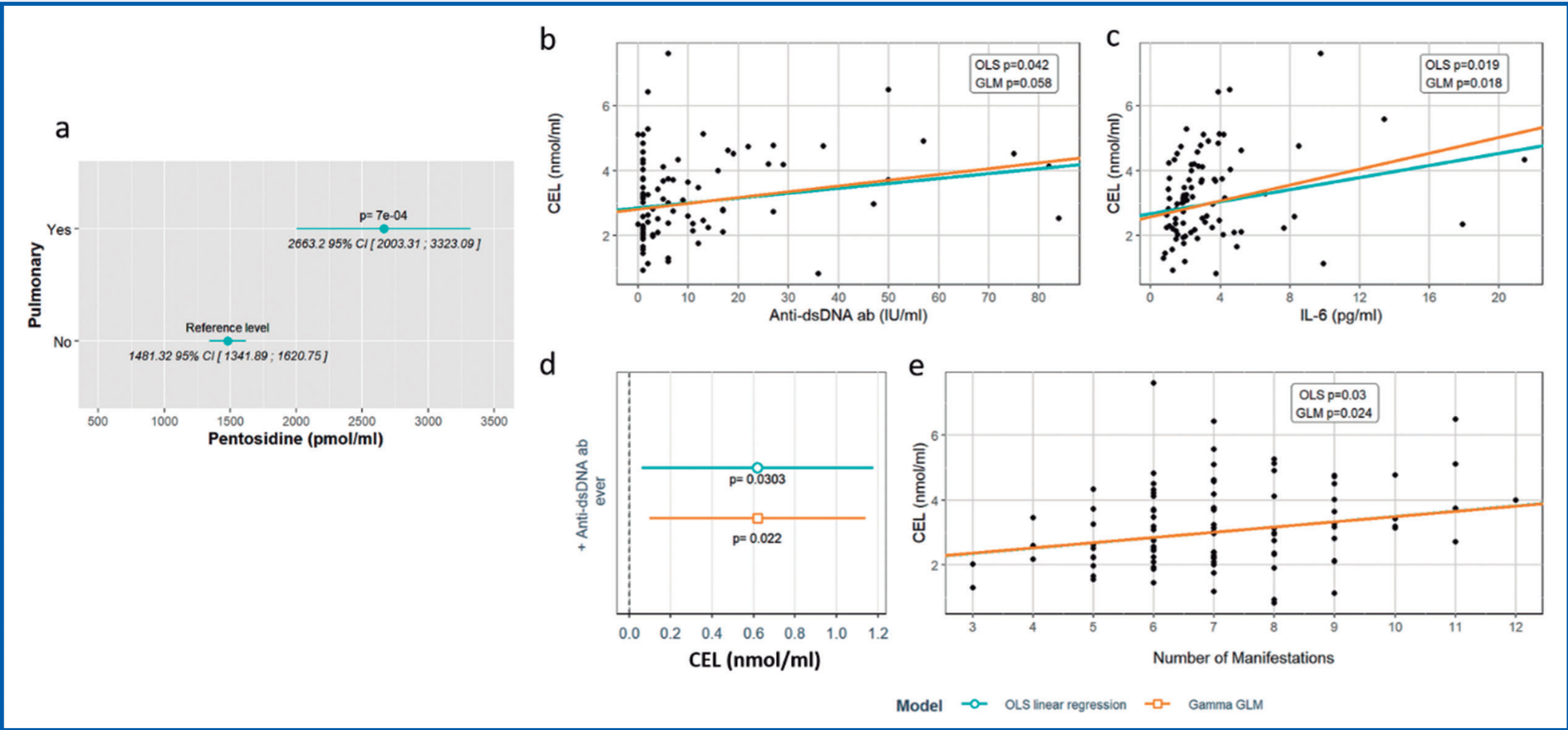
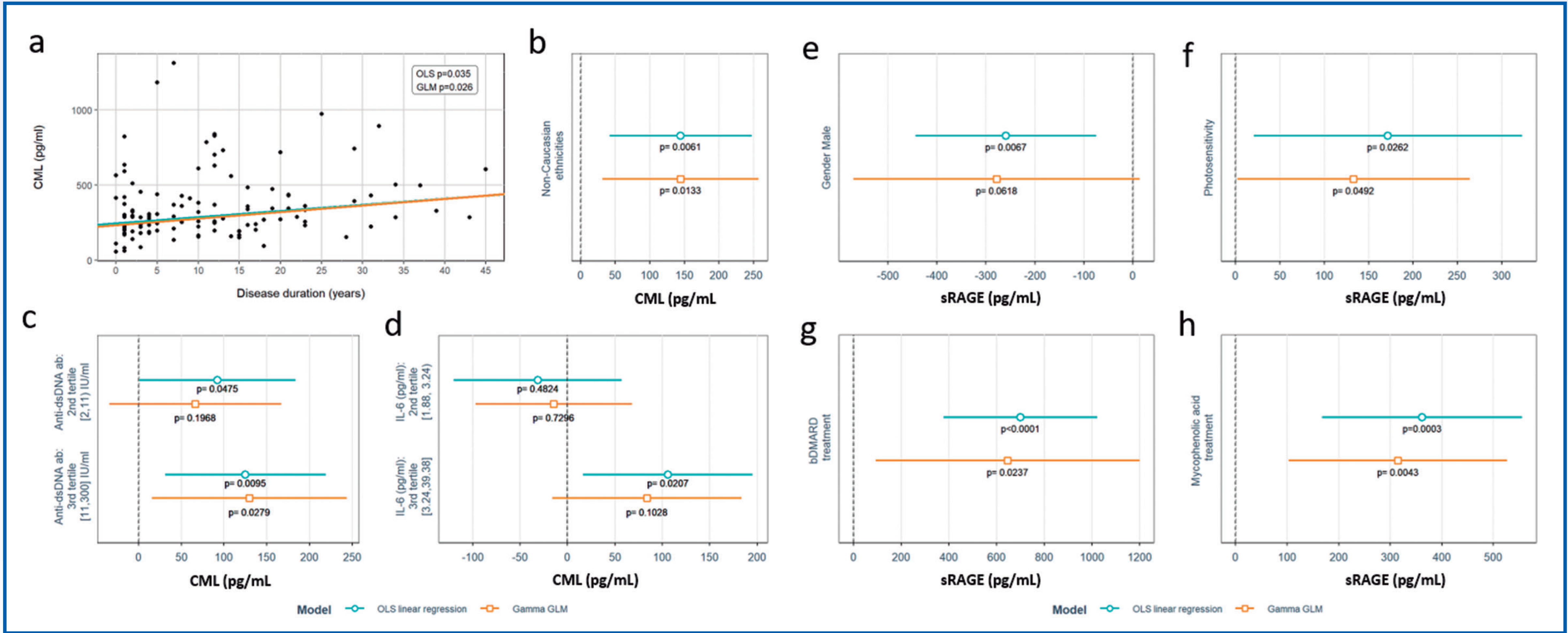


Figure 2: CML and sRAGE statistically significant associations with SLE



## Conclusion

- The correlation observed between serum AGEs and sRAGE with SLE markers indicate that the AGEs-sRAGE axis seem to have a role as a new biomarker in this disease related to management and prognosis, which would have enormous implications in a field currently uncovered in SLE.
- The association with specific disease manifestations may indicate a particular clinical phenotype related to specific AGEs and/or sRAGE levels, unveiling another potential clinical use of these products.

