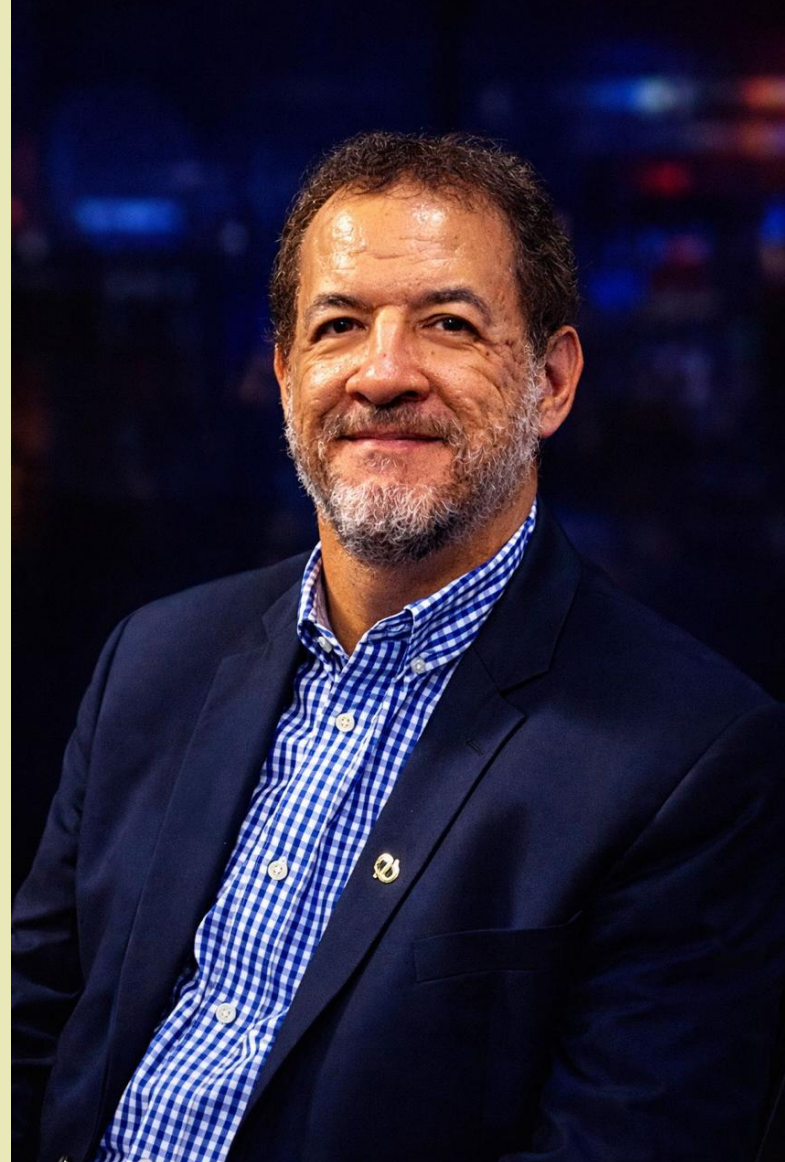




Salivary Biomarkers for Alzheimer’s disease: a comparative analysis between an original cohort and published evidence



Gustavo A.A. Santos, PhD^{1,2}

- 1. USP – University of Sao Paulo¹ – Av. Bandeirantes 3900, Ribeirao Preto– SP, Zip Code 14049-900 Brazil – e-mail: gusfarma@hotmail.com
- 2. UNICAMP-University of Campinas, Brazil

BACKGROUND

The search for accessible, non-invasive biomarkers for Alzheimer’s disease (AD) has intensified due to the limitations of cerebrospinal fluid and blood-based testing, particularly in large-scale or low-resource settings. Saliva has emerged as a promising biological matrix, reflecting pathological processes related to neurodegeneration and inflammation. However, studies investigating salivary biomarkers in AD remain heterogeneous, with variability in biomarkers, analytical platforms, and clinical populations. Direct comparisons between independent cohorts and published evidence are scarce, limiting translational interpretation. This study aimed to compare findings from an original salivary biomarker cohort with results reported in the literature, focusing on convergence, divergence, and methodological influences.

METHODS

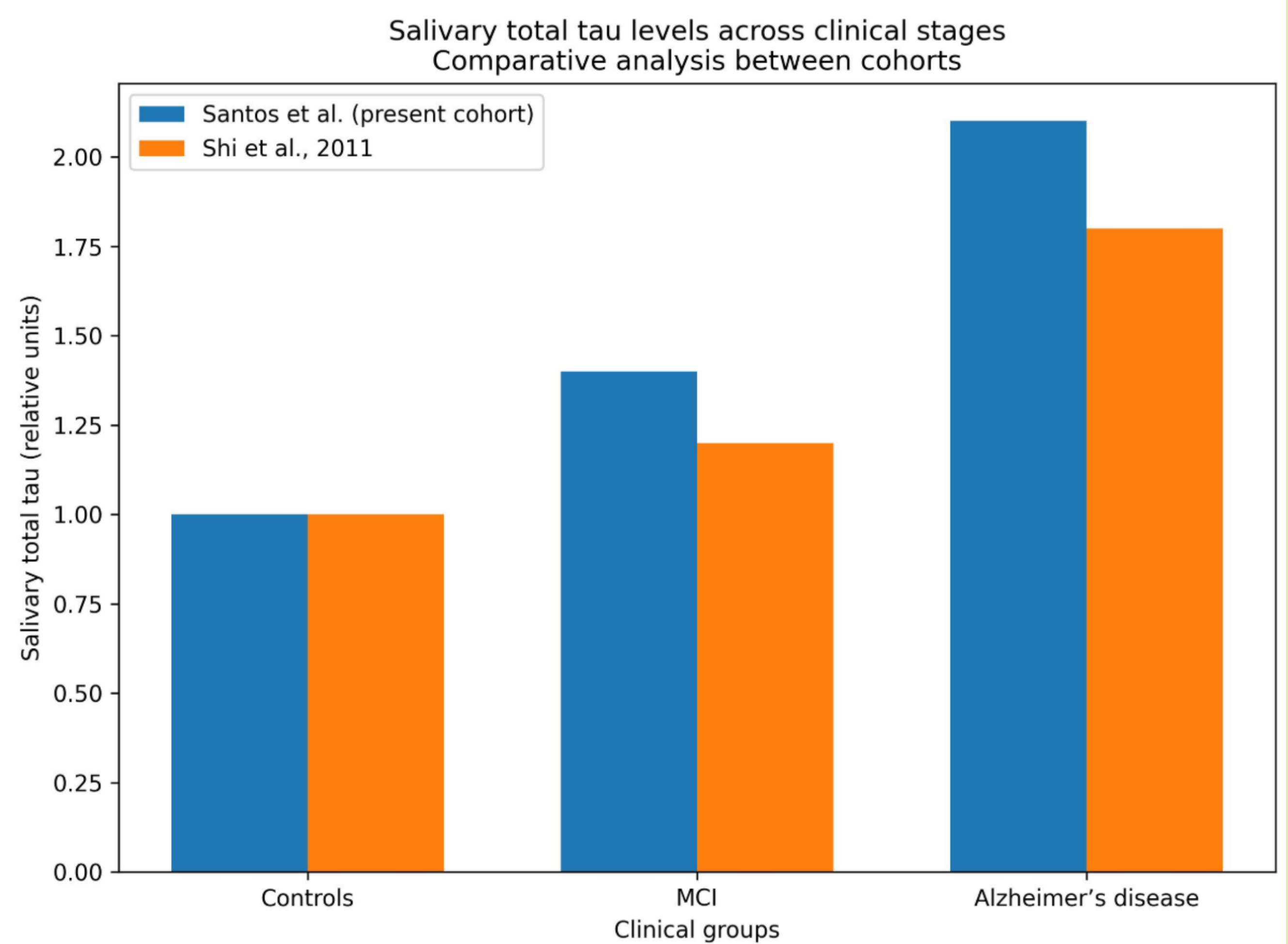
An observational study was conducted including cognitively normal controls, individuals with mild cognitive impairment (MCI), and patients with clinically diagnosed AD. Saliva samples were collected using standardized procedures and analyzed for neurodegenerative and inflammatory biomarkers using immunoassay-based techniques. In parallel, a comparative narrative analysis of published human studies on salivary biomarkers in AD was performed. Eligible studies were selected based on clinical diagnosis, use of saliva as the biological matrix, and quantitative biomarker assessment. Key methodological and outcome data were qualitatively compared with results from the present cohort.

Results

Our cohort demonstrated a progressive increase in salivary total tau across cognitive stages, with the highest levels observed in AD. Comparison with published studies, including Shi et al. (2011), Ashton et al. (2018), and Pannee et al. (2016), showed overall directional convergence, particularly between AD patients and cognitively normal controls. Partial divergence was observed in MCI populations, likely reflecting differences in assay sensitivity, saliva handling, and clinical heterogeneity.

Salivary Total Tau in Alzheimer’s Disease - Comparative Evidence

Study (Authors, Year)	Population	Analytical Method	Key Salivary Tau Findings	Agreement
Our cohort	Controls, MCI, AD	ELISA-based immunoassay	Progressive increase across stages; highest levels in AD	Reference
Shi et al., 2011	Controls vs AD	ELISA	Higher salivary total tau in AD vs controls	Convergent
Ashton et al., 2018	Controls, MCI, AD	Immunoassay	Elevated tau in AD; partial overlap in MCI	Partial convergence
Pannee et al., 2016	Controls vs AD	High-sensitivity immunoassay	Detectable tau with high inter-individual variability	Directional convergence
Figueira et al., 2016	AD only	Immunoassay	Elevated salivary tau reported in AD patients	Supports plausibility



Conclusion

- These findings support the biological plausibility of saliva-based biomarkers for AD while highlighting challenges related to standardization and cross-study comparability. Salivary biomarkers represent a complementary diagnostic strategy with strong potential for scalable screening and research applications, particularly where invasive procedures are impractical

The authors declare that there is no conflict of interest related to this presentation.