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## Salivary extracellular vesicles as a potential biomarker of Parkinson's disease

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*Introduction:* Extracellular vesicles (EVs) are small vesicles released by many cells, including neurons and can be isolated from body fluids, like saliva [1]. α-Synuclein (α-syn) has recently been detected in EVs and may contribute to the spreading of disease pathology in α-synuclein-related neurodegeneration2. The detection of α-syn in salivary EVs may contribute to find potential biomarker for Parkinson disease (PD) onset and progression.

*Objective:* 1) To establish the methodology to isolate EVs from saliva; 2) To examine both oligomeric (α-synOlig) and total α-Syn (α-synTotal) contained in the EVs to validate their potential diagnostic and prognostic value for PD.

*Methods:* Saliva samples were obtained from 48 PD patients (PDs) and 31 healthy controls (HCs). The EVs were isolated by differential ultracentrifugation [3]; western blot (WB) and Nanosight (NTA) were used to validate the protocol and to analyze EVs size and concentration. The transmission electron microscopy (TEM) was used to assess EVs morphology [4]. The concentration of α-synTotal, α-synOlig was determine by ELISA technique [5]. Diagnostic value and clinical relevance of salivary EVs α-syn were assessed by Receiver Operator Characteristic (ROC) curve and Pearson correlation [6].

*Results:* We first characterized the EVs by WB and TEM, the NTA showed that the concentration of EVs is higher in HCs than PDs, while the dimensions do not change. The ELISA test revealed that the level of both α-synTotal and α-synOlig are higher in PDs compared to the HCs (α-synTotal: sensitivity = 66%, specificity = 76%; α-synOlig sensitivity = 83%, specificity = 60%). We found correlations of α-synOlig with the duration of the disease and the mini mental state examination (MMSE).

*Conclusions:* These findings support the role of salivary EVs cargoes as a promising biomarker for PD and purpose to further investigate the possible correlation of α-Syn with disease severity, which could reveal α-Syn as a predictor of PD progression.

**References:**

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