CASE REPORTS OF FIRST EXPERIENCES WORLDWIDE WITH CONTINUOUS ORAL LEVODOPA VIA A NOVEL DENTAL PUMP IN PARKINSON'S DISEASE PATIENTS

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OBJECTIVE: To assess the safety, tolerability, and pharmacokinetics (PK) of a novel continuous levodopa-carbidopa oral pump (LCOP) delivery system in patients with early PD.

BACKGROUND: Levodopa (LD) remains the gold standard of symptomatic treatment of Parkinson's disease (PD). However, with disease progression and chronic treatment, motor and non-motor fluctuations can occur. Continuous LD infusions can reduce the risk of developing motor complications and improve quality of life[i] but to date remain invasive, associated with potentially serious side effects and discomfort related to the need for a free standing pump. The LCOP delivery system is being studied to provide continuous LD delivery in a relatively non-invasive manner.

METHOD: We report on our experience with the first two PD patients worldwide treated by a novel therapeutic modality as a part of the **open label phase IIb clinical trial** (ClinicalTrials.gov Identifier: NCT04778176) with the **LCOP system :** intraorally placed mini pump, continuous LD/CD release using pre-filled, single-use containers inserted into a custom dental retainer.

Figure 1 : LCOP system

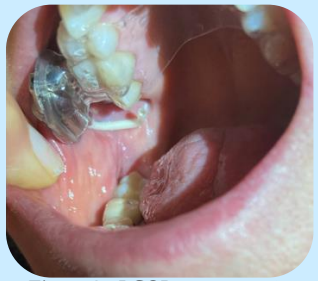

Figure 2 : LCOP system in situ

Safety, tolerability, PK, and clinical function (ON/OFF home diaries and UPDRS) were assessed at fixed intervals. Participants were treated at the Centre Hospitalier in Luxembourg with continuous 50mg/13mg/hour LD/CD x 12 hours during the day. Therapy was initiated in an inpatient setting and continued at home for 14 days.

RESULTS:

- Excellent subjective tolerance and improvement in motor and non motor symptoms.
- No clinically significant adverse reactions.
- PK analyses will be performed at the end of the study.
- Reduction of 150 minutes of OFF time reported by each participant.

Participant characteristics	Participant 1	Participant 2
Age (years)	56	59
Gender	Male	Female
LDD (mg)	800	600
Hoehn & Yahr staging	2.5	2.5
Disease duration (years)	8	6

Figure 3 : Participant characteristics

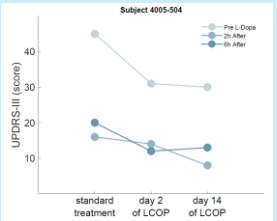

Figure 4 : UPDRS-III with LCOP[ii]

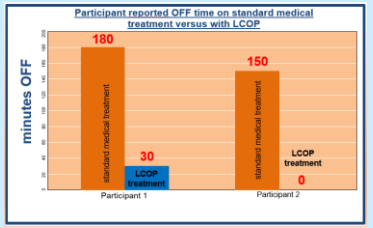

Figure 5 : reported OFF time with LCOP

CONCLUSION: This is the first report of the use of this novel LCOP delivery system PD patients. The treatment was **safe** and **well tolerated,** and there was a **marked reduction in off time**. The study is ongoing and PK results to confirm that LCOP provides continuous plasma LD levels are awaited.

[i] Olanow CW, et al. Continuous versus intermittent oral administration of levodopa in Parkinson's disease patients with motor fluctuations: A pharmacokinetics, safety, and efficacy study, Mov Disord 2019

[ii] Special thanks to Dr. Eduardo Rosales Jubal for UPDRS graph creation.

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