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Preliminary Evaluation of Safety and Efficacy of Cold Atmospheric Plasma (CAP) Therapy in Chronic Peyronie's Disease: Clinical Trial phase 1

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ABSTRACT

Introduction: Peyronie's disease (PD) is a chronic fibrotic disorder causing penile curvature and sexual dysfunction. Cold atmospheric plasma (CAP) is a novel, non-invasive treatment with potential antifibrotic effects. This study evaluated the efficacy and safety of CAP in men with chronic PD.

Materials and Methods: In a phase I, double-blind, self-controlled trial, men with stable PD (curvature 30°–90°, with a disease duration of ≥12 months) underwent CAP treatment on one penile plaque, with the contralateral plaque as the control. CAP was administered using the Life Plas@ Med device (Plasma Technology Development Company) twice weekly for five weeks. The primary outcome measured was penile curvature using goniometry, while the secondary outcomes included sexual satisfaction and erectile function.

Results and Discussion: Preliminary findings from the phase I trial indicated that CAP therapy was associated with a reduction in penile curvature among men with chronic PD. Patients receiving CAP treatment reported improvements in sexual satisfaction as assessed by validated questionnaires. The treatment was well tolerated, with no serious adverse effects observed.

Conclusion: Our findings suggest that CAP therapy could provide benefits in managing penile deformity and enhancing patient-reported outcomes, warranting the need for further investigation in larger, longer-term studies.

Keywords: Cold atmospheric plasma, Penile Curvature, Peyronie's disease, Sexual satisfaction

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