

Trial Results Summary

Trial Identification

Study Title: Photodynamic immune modulation in common warts: the impact of methylene blue therapy.

Condition: Multiple common warts.

Intervention: Methylene blue-mediated photodynamic therapy (MB-PDT).

Ethics Approval Number: 2026062333.

Study Design: Single-arm, non-randomized interventional study.

Target and Final Sample Size: 30 participants.

Background and Objectives

The study evaluated the clinical efficacy and immunological effects of methylene blue-mediated photodynamic therapy in adults with multiple common warts. The primary objective was to assess the clinical improvement of wart lesions. Secondary objectives were to evaluate changes in serum IL-2 and TNF- α levels and explore their relationship with treatment response.

Participant Flow

Assessed and enrolled: 30 participants.

Received intervention: 30 participants.

Completed treatment protocol: 30 participants.

Completed follow-up assessments at 1 month and 6 months: 30 participants.

Included in final analysis: 30 participants.

Baseline Characteristics

Mean age: 33.5 ± 11.7 years.

Sex distribution: 16 males (53.3%) and 14 females (46.7%).

All participants had clinically diagnosed multiple common warts and met eligibility criteria.

Primary Outcome

Mean treated wart size decreased from 1.44 ± 0.61 at baseline to 1.07 ± 0.65 at 1 month and 0.93 ± 0.64 at 6 months ($p=0.001$). Mean percentage improvement of treated lesions was 32.44% at 1 month and 44.15% at 6 months.

Secondary Outcomes

Serum IL-2 levels decreased significantly from 3.89 pg/mL at baseline to 2.68 pg/mL at 6 months ($p<0.0001$). Serum TNF- α levels decreased significantly from 9.36 pg/mL at baseline to 6.86 pg/mL at 6 months ($p=0.01$). Significant associations were observed between cytokine changes and clinical response.

Adverse Events and Safety

No serious adverse events were reported during the study period. Treatment was generally well tolerated.

Conclusion

Methylene blue-mediated photodynamic therapy demonstrated significant clinical efficacy in patients with multiple common warts and was associated with measurable immunomodulatory effects. The intervention was well tolerated and supports further investigation in larger controlled studies.