

Research Letter

Topical Application of Tea Tree Oil for the Treatment of Verruca Vulgaris

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KEYWORDS

aromatherapy; human papillomavirus; naturopathy; tea tree oil; warts; verruca vulgaris

Introduction

Warts (verruca vulgaris) are benign epithelial proliferations associated with human papillomavirus (HPV) infection. They are a DNA virus belonging to the Papillomaviridae family [1]. Worldwide, 10% of the population is affected, and the prevalence is high in children attending school [2]. Common warts are excessive growths with an irregular surface ranging from 1 millimeter to several centimeters and are commonly seen on the upper and lower extremities [2]. Conventional treatment for warts includes topical application of salicylic acid, podophyllotoxin, trichloroacetic acid, formaldehyde, 5-fluorouracil, and photodynamic therapy [1]. Procedures such as cryotherapy, laser ablation, electrocautery, and surgical excision are painful and have higher chances of recurrence [1]. In aromatherapy, tea tree oil (TTO), extracted through steam distillation of the leaves and terminal branches of the Australian plant *Melaleuca alternifolia*, is used for the management of various dermatological conditions, including HPV [3,4], by naturopathy physicians. This letter aims to present TTO as a potential remedy for HPV warts, highlighting its properties, benefits, and the need for further research to establish its effectiveness and safety.

Methods

We performed a comprehensive literature search to include original articles, case reports and case series, and abstracts that discussed the effect of TTO on HPV verruca vulgaris; in PubMed, Embase, and Google Scholar; and were published on April 9, 2022, or earlier. Reviews and articles that used TTO with other interventions were excluded. The following keywords were used: “tea tree oil” OR “aromatherapy” OR “naturopathy” AND “human papillomavirus” OR “HPV” OR “verruca vulgaris” OR “warts.”

Results

A total of 4 articles involving 5 patients with warts treated with aromatherapy were included (Table 1). Warts were predominantly found on the upper and lower extremities, except for one case where the location was periungual [5]. The efficacy was assessed by using the visual analog scale [3] and clinical photographs daily [1,3]. Additionally, a follow-up was conducted to monitor for any recurrence [1]. All the studies included in this analysis reported complete clearance of warts.

Table 1. Characteristics of the studies included in the research letter.

Study, year, and participants	Country	Age (years)	Diagnosed by	Site of warts	Intervention details	Outcome
Millar and Moore [4], 2008						
Female pediatric patient	United Kingdom	7	Dermatologist	Distal phalanges of the right middle finger	Topical application of tea tree oil once daily for 12 days	Complete clearance of warts without reoccurrence
Alsanad and Alkhamees [3], 2016						
Male child	Saudi Arabia	9	Dermatologist	Left sole	Topical application of tea tree oil twice a day for 20 days	Complete clearance of warts without reoccurrence
Male child		14		Proximal phalanges of the right little finger	Topical application of tea tree oil twice a day for 10 days	
Lim et al [5], 2020						
Female child	South Korea	12	Dermatologist	Periungual and plantar	Topical application of tea tree oil for 9 months	Complete clearance of warts without reoccurrence
Deenadayalan et al [1], 2022						
Adult female	India	22	Dermatologist	Distal phalanges of the right hand	Topical application of tea tree oil once a day for 7 days, afterward alternative day for 2 weeks	Complete clearance of warts without reoccurrence

Discussion

This research letter indicates that TTO can be beneficial in treating warts, which are caused by HPV and commonly occur in pediatric and school-aged children. The potent anti-inflammatory and antiviral properties of TTO have been widely used to treat HPV infections. In vitro studies have also used TTO to treat herpes simplex virus [4]. Terpinene-4-ol and α -terpineol in TTO are known for their antiviral property and inhibit viral replication in both enveloped and nonenveloped viruses [4]. Terpinene-4-ol can inhibit the synthesis of proinflammatory cytokines, tumor necrosis factor, interleukin-1

(IL-1), IL-8, and prostaglandin E2 while increasing anti-inflammatory cytokines (IL-10 and IL-4), thereby reducing pain [1]. In addition to pain management and warts clearance, a pleasant scent may play a role in patient satisfaction. The treatment is also less expensive and has no adverse effects. The limitation of this letter was using single case reports with a small number of patients.

TTO should be considered a safe, cost-effective, noninvasive modality in the management of HPV warts. More research is necessary to understand the clinical applications and other long-term systemic effects.

Conflicts of Interest

None declared.

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Abbreviations

HPV: human papillomavirus

IL: interleukin

TTO: tea tree oil

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