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Turmeric (Curcuminoids): A Possible Effective Antiviral Herb

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Abstract

Turmeric is an herbal plant that is widely used as a traditional herbal medicine in many countries. Curcumin displays its anti-viral activities through several mechanisms of action. In this case report we present a 10-year-old child with herpetic vesiculo-ulcerative lesions who was treated with turmeric along with systemic acyclovir which resulted in complete healing by the third day of application.

Keywords

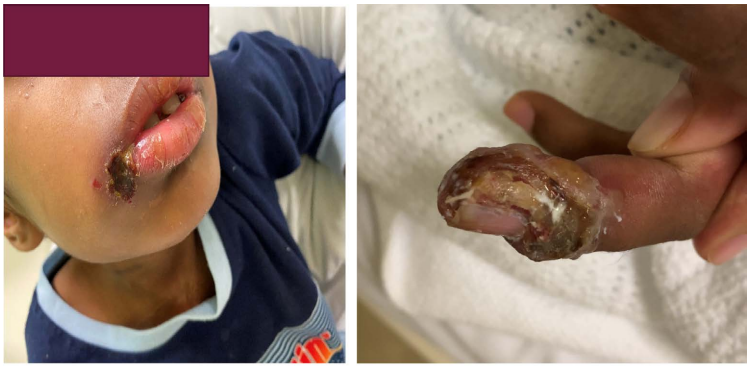
Turmeric, HSV, Antiviral Effect

1. Case Description

A 10-year-old boy with a relapsed acute B-cell lymphoblastic leukemia developed febrile neutropenia and skin eruptions while being treated with a second line chemotherapy awaiting his allogenic transplant. The lesions looked classically herpetic vesiculo-ulcerative surrounded by redness and inflammation. They were located at the right angle of the lips (herpes labialis) and the left ring finger-tip (herpetic whitlow) (Figure 1(a) and Figure 1(b)). Bacterial swabs were negative for any growth, but viral swab revealed Herpes Simplex Virus (HSV) with no resistance test to acyclovir performed for this child. Moreover, serum HSV PCR was negative. He was initiated on topical and systemic acyclovir but didn't show significant response despite prolonged use (more than 7 days). A trial of topical turmeric was applied by the mother to the affected finger (Figure 2(a) and Figure 2(b)) which resulted in complete healing by the third day of application (Figure 3(a) and Figure 3(b)).

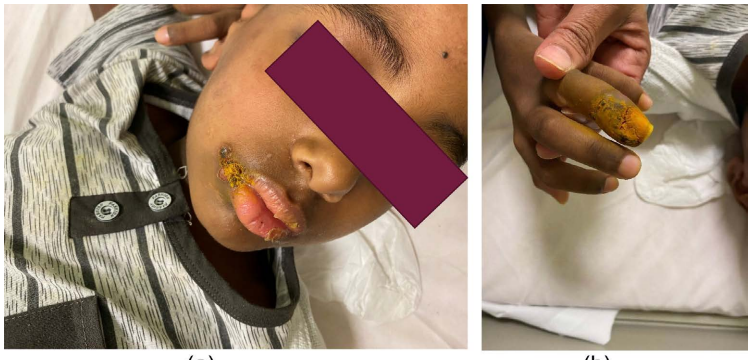
2. Discussion

Turmeric is an herbal plant that is widely used as a traditional herbal medicine



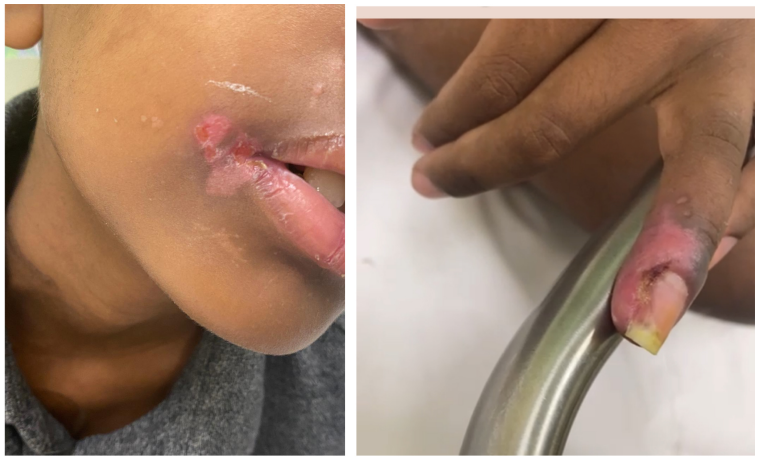
(a) (b)

Figure 1. Vesicular lesions with ulceration and white discharge at the right angle of the mouth (a) and right ring finger tip (b).



(a) (b)

Figure 2. Turmeric application as shown on the affected lesions.



(a) (b)

Figure 3. Lesions completely healed with almost completely intact skin with no new vesicles.

in many Asian and far eastern countries for long centuries. It belongs to the ginger family Zingiberaceae [1]. There are many studies that explored turmeric's therapeutic effects and biological functions.

Multiple compounds are responsible for its medical effects, collectively

known as curcuminoids, which includes: curcumin, demethoxycurcumin (DMC), and bisdemethoxycurcumin (BDMC) [1] [2]. It is also called (1,7-bis (4-hydroxy3methoxyphenyl)-1,6-heptadiene-3,5-dione)) or diferuloylmethane, is well studied compound for its anti-tumor, antioxidant, anti-inflammatory, anti-viral and anti-infectious properties [3] [4] [5] [6] [7].

Curcumin displays its anti-viral activities through several mechanisms of action. The bioconjugates of curcumin like di-O-tryptophanylphenylalanine curcumin, di-O-decanoyl curcumin, di-O-pamitoyl curcumin, di-O-bis-(*γ,γ*)folyl curcumin, C4-ethyl-O-*γ*-folyl curcumin, and 4-O-ethyl-O-*γ*-folyl curcumin, had potent antiviral activity against multiple viruses including herpes simplex virus (HSV), parainfluenza virus type 3 (PIV-3), feline infectious peritonitis virus (FIPV), vesicular stomatitis virus (VSV), flock house virus (FHV), and respiratory syncytial virus (RSV) [8].

In vitro study of curcumin and its derivatives, namely, gallium-curcumin and Cu-curcumin, revealed remarkable antiviral activity against HSV-1 in cell culture by decreasing the immediate early (IE) gene expression and infectivity of HSV-1 [8]. According to Kutluay *et al*., it affects the viral trans-activator protein VP16-mediated enlistment of RNA polymerase II to IE gene promoters, by utilizing the mechanism of the transcriptional coactivator proteins p300/CBP histone acetyltransferase activity in the HSV gene suppression [9]. The limitation of this case report is the concurrent use of acyclovir when turmeric was applied but the rapid resolution of the lesions after the application rises a scientific question of potential antiviral effect turmeric may play in such viral infection.

3. Conclusion

This case report illustrates the potential antiviral effects of turmeric which should be further studied *in vivo* and *in vitro* studies in order to prove or disprove its effects on viral replication.

Acknowledgements

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Consent

Mother of the patient gave her consent that she agreed the doctors could use and publish her child disease related article with child finger pictures, but personal information deleted.

Conflicts of Interest

All authors confirm that there are no conflicts of interest.

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