Title: Development of TMR5 as a management therapy for herpes infections: Results of preclinical evaluations

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Abstract

Background

TMR5 is a product of a Kenyan medicinal plant, prepared as a lyophilized extract and a cream. The products have been evaluated for preclinical safety and efficacy in suitable *in vitro* and *in vivo* systems of herpes infections. Herpes is a viral infection affecting over 60% of the sub-Saharan Africa young adult population. It is caused by two similar viruses, HSV-1 and HSV-2 which share 50% gene sequence homology. The infection in a major cause of genital ulcer disease, associated with increased risks of HIV acquisition and transmission in the region.

Objective

To develop TMR5 as an alternative therapeutic agent for herpes infection management.

Methodology

The plaque inhibition and viral yield reduction assays were applied *in vitro* for assessment of antiviral activity. Toxicity was evaluated by the trypan blue exclusion method. *In vivo*, Mice and guinea pig cutaneous and genital HSV infection models were used respectively to evaluate efficacy following oral and topical treatments.

Results

Cytotoxic concentrations of TMR5 in mammalian cell lines indicated a wide therapeutic index (CC_{50} $\geq$58.5±4.6µg/ml). An EC_{50} of $\leq$14.7±3.7µg/ml for both wild type and resistant strains of HSV was realized in plaque and viral yield assays. Oral (250 mg/kg) and topical (10% cream) administrations exhibited a significant delay in onset of infections, hindered progression of infection to lethal forms with increased mean survival times and low mortality. No acute toxicity has been realized at the therapeutic concentrations.

Conclusion/recommendations

TMR5 has demonstrated potential as an anti-herpes agent and arrangements are presently underway to evaluate its efficacy and safety in a higher mammalian model.