Expression of affordable microbicides to combat the spread of HIV pandemic

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INTRODUCTION

HIV prevalence is over 33 million worldwide with 68% of AIDS sufferers residing in sub-Saharan Africa (1). Currently the available HIV prevention tools are feasible but women cannot insist on these preventive measures due to social, cultural and economic issues. Therefore, there is a strong need to find affordable HIV preventive measure that women can initiate, and microbicides are one such measure.

Microbicides are products that are applied topically inside the vagina or rectum to prevent the transmission of HIV and other sexually transmitted diseases (2). Previous microbicide candidates have failed due to lack of safety and efficacy, new candidates will need to be appropriate for use (3).

Some human chemokines, including RANTES (regulated upon activation, normal T expressed and secreted) show anti-HIV activity through their ability to block the HIV co-receptor CCR5 (Figure 1) and a number of N-terminally modified analogues of these proteins with much higher antiviral potency have been developed to generate potentially new low-cost preventatives or medicines (Figures 2 and 3) (4). These molecules have strong potential for use as microbicides, and it is imperative that they be produced in a cost effective manner. Plants offer an alternative method of cost effective production of protein therapeutics, and in this work, we test their effectiveness in expressing two RANTES analogues, 5P12 and 6P4-rAntES.

MATERIALS AND METHODS

Expression of microbicides can be achieved via the stable transformation of tobacco with the genes encoding the relevant molecules. More commonly, transient expression is used. Transient expression of the microbicides was achieved in a tobacco plant distantly related Nicotiana benthamiana by introducing the microbiodic genes under the control of the CaMV35S promoter and the deconstructed TMV virus system from Icon Genetics (IconMagntM) (5). the microbicidal genes under the control of the caMV35S promoter and the de-achieved in a tobacco plant distant relative tobacco with the genes encoding the relevant molecules. More commonly, the microbicidal genes under the control of the caMV35S promoter and the de

RESULTS

Expression of affordable microbicides to control HIV transmission - tobacco plant as vehicle to express the anti-HIV proteins to be formulated as topical microbicides.

REFERENCES


