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Inhibition of Viruses by Metadichol®: A Novel Nano Emulsion Lipid

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Abstract

The inevitable, but unpredictable, appearance of new infectious diseases has been recognized for centuries well before the discovery of causative infectious agents. Today, however, despite advances in development of therapeutics, and vaccines the ease of world travel and increased global interdependence have added layers of complexity to containing these infectious diseases that affect not only the health but the economic stability of societies. Viruses and bacteria and other pathogens impose enormous pressures on their human hosts, and combatting these pathogens is fundamental to the propagation of a species. Innate immunity provides the foundation for pathogen resistance.

Keywords: Zika; Ebola; Dengue; Chikungunya; H1N1; Respiratory viruses, Metadichol; Inverse agonist; Protean agonist; Malaria

Introduction

The world is being ravaged by viruses at regular intervals and there is no long term solution insight. Our approach for a long term solution was focused on prevention by enhancing innate immunity towards that goal we developed Metadichol® [1]. Its constituents are food ingredients that are free of toxic, mutagenic, or teratogenic properties [2,3]. We recently showed that [4,5] Metadichol exhibits potent, broad spectrum viral inhibitory activity in Vero and MDCK cells infected with Dengue, Ebola, Marburg, Influenza A (H1N1), Chikungunya and Human Respiratory Syncytial viruses. In addition, we tested the efficacy of Metadichol® in preventing cell death caused by Adenovirus, Tacaribe Mammarenavirus, Rift Valley Fever virus, SARS coronavirus, Japanese Encephalitis virus, West Nile virus, and Yellow Fever virus (Figure 1). Also presented a case study of two patients diagnosed with Dengue Fever who were successfully treated with Metadichol® (see attached supplement) which confirmed the inhibition of dengue virus that was demonstrated in-vitro.

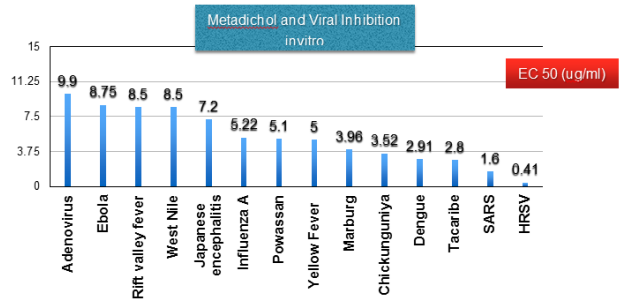

Figure 1: Efficacy of Metadichol® in preventing cell death.

Commercially available antiviral therapeutic compounds block replication processes shared by the virus and infected target cells [6]. Such compounds are potentially toxic, mutagenic, and/or teratogenic for the host and can induce drug-resistant viral mutant sub-strains. Metadichol fills a need as an efficacious new antiviral compounds that is free of such deleterious effects. In addition, it is a broad spectrum as it also inhibits parasites and also bacteria like MRSA.

Discussion

Lipids play key role as immune response modulators. Many of the receptors that activate the innate immune system have evolved to recognize and react to the hydrophobic portions of molecules should these become suddenly exposed [7]. These properties have been applied in the treatment of autoimmune and inflammatory diseases [8,9]. Metadichol is a Nano emulsion of long-chain lipid alcohols (C-26, C-28 and C-30), which are commonly known as Policosanol's. Metadichol has a particle size of less than 60 nm. It binds to the vitamin D receptor (VDR) as an inverse agonist. It is the only known inverse agonist of VDR in medical literature. Calcitriol (1,25-Dihydroxy Vitamin D) is the natural ligand for the VDR and acts as an agonist. Metadichol acts a inverse agonist but more likely is a Protean agonist. Protean agonists act as both positive and negative agonists on the same receptor, depending on the degree of constitutive activity that is present. If there is no constitutive activity, the agonist would be a positive agonist. When

constitutive activity is present, the protean agonist would be an inverse agonist [10].

Viruses have evolved strategies to knock out the activation of the VDR and stop it from producing antimicrobials that would otherwise kill the intracellular microbes. For e.g., Persistent Epstein-Barr virus infection down regulates VDR >10 fold [11]. By binding to the VDR the innate immune system is compromised. Then the cytokine release causes the adaptive immune system to start working extra hard and try and deal with this problem that the innate immunity was handling. Metadichol by binding to the VDR reactivates immune function competitively disrupts this process. In addition to VDR binding, Metadichol shares cross-reactivity with other nuclear receptors [12,13], which may explain its activity against a wide range of viruses.

Conclusion

Metadichol is ready for large scale Clinical testing in areas which are ravaged by viruses. Once proven on large populations, Metadichol could be used as a preventive nutritional supplement in countries where viral fevers are widely prevalent. Metadichol is being sold as a nutritional supplement in a few Asian countries for the last two years and is extremely well tolerated. So far no reports of any adverse side effects. Metadichol is made from renewable sources and could serve as safe and cost effective solution to mitigating viral diseases that threatens humanity.

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