Determination of anti-viral activity of natural marine polysaccharides against Human Rhinovirus

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Human rhinoviruses (HRVs), are responsible for more than one-half of cold-like illnesses all year round and worldwide. The common cold is primarily a self-limited but recurrent illness, with an average incubation period of 2 days and a symptom duration period of 7 to 14 days [1], [3], [4]. Despite the relatively mild course of illness, the frequency of HRV infections and their broad clinical spectrum cause considerable social and economic burden. So an effective preventive or therapeutic control of HRVs through cost-effective natural formulation, with minimal side effects would have a significant health impact. Among the natural marine polysaccharides, available in the market, there exist only Iota-Carrageenan, which has proven the anti-viral activity against Human Rhinovirus (non-enveloped virus) [6–12]. The anti-viral properties of algal polysaccharides have generated great interest in activities reported against a wide range of viruses. The inhibitory effect of sulfated polysaccharides appears to be based mainly on their ability to interfere with the initial attachment of the virus to the target cell, and consequently leading to the blockade of viral entry [20]. In this study, the marine polysaccharides, extracted by a private company, were tested for their anti-viral efficacy against three different strains of HRV. The anti-viral activity was assessed using TCID50 Inhibition assays on H1 Hela cells with the addition of extract at different time points of infection. We also determined the effect of physical changes and synergism on the anti-viral effectiveness of extracts. Contrary to the findings of potent anti-viral inhibition seen with Iota-Carrageenan, we did not find anti-viral activity of the tested polysaccharides under the tested conditions. Because of the lack of activity observed with marine polysaccharides, we decided to not only characterize the extracts better but also determine the potential of anti-viral activity against enveloped respiratory viruses.