

Antiviral activity of different 1,4-dimethyl-9H-carbazoles

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The research focused on the discovery and the development of compounds gifted with a broad-spectrum antiviral activity is still very attractive and challenging. Indeed, the risk of emerging infections in humans and animals caused by different viruses, most importantly RNA viruses, is a high and topical issue. Several emerging viruses, for which no efficient vaccine or 'ad hoc' therapy are available, originate from infected animals. Amongst them, single stranded, positive-sense RNA viruses (ssRNA⁺) include many human pathogens, such as the human immunodeficiency virus type I (HIV-1) (Buonaguro, Tornesello, & Buonaguro, 2007) and the new severe acute respiratory syndrome (SARS) (Poon, Guan, Nicholls, Yuen, & Peiris, 2004). Besides, the large group of single stranded, negative-sense RNA viruses (ssRNA⁻) include respiratory syncytial virus (RSV), parainfluenza and influenza viruses, two of the most deadly human pathogens (Ebola and Marburg viruses), Newcastle disease virus (NDV) and rinderpest virus (RPV). Viruses encompass an enormous variety of genomic structures and many possess DNA genome or may even have DNA and RNA depending on life cycle different stages. DNA viruses generally have larger genomes because with the exception of the single stranded (ss) DNA viruses (Perez-Losada, Arenas, Galan, Palero, & Gonzalez-Candelas, 2015). Considering the unremitting spread of these pathogens, it is desirable to possess an arsenal of suitable countermeasures, unfortunately, no specific antiviral therapy is available for the prevention and/or treatment of viral diseases. At present, in fact, only treatment with interferon, alone or combined with ribavirin, has been approved for the treatment of *Hepatoviruses* infections (Leysen, Balzarini, De Clercq, & Neyts, 2005). Therefore, additional compounds with antiviral activity are urgently needed in order to control viral infections. Under this point of view, we studied the antiviral activity of a series of compounds bearing a carbazole core (Figure 1) (Caruso et al., 2008) in a cell-based assay. Indeed, several biological activity have been ascribed to carbazole derivatives Caruso review in press (Caruso et al., 2015) and amongst them the antiviral properties seems to be very attractive and effective.