Retinoids inhibit measles virus in vitro via nuclear retinoid receptor signaling pathways.

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Abstract
Measles virus (MV) infects 30 million children every year, resulting in more than half a million deaths. Vitamin A (retinol) treatment of acute measles can reduce measles-associated mortality by 50-80%. We sought to determine whether or not retinoids can act directly to limit MV output from infected cells. Physiologic concentrations of retinol were found to inhibit MV output in PBMC and a range of cell lines of epithelial and endothelial origin (40-50%). Near complete inhibition of viral output was achieved in some cells/lines treated with all-trans retinoic acid (ATRA) and 9-cis RA (9cRA). Important attenuation of the anti-MV effect of retinoids in R4 cells, a subclone of a retinoid-responsive cell line (NB4) deficient in RAR signaling, demonstrates that this effect is mediated at least in part by nuclear retinoid receptor signaling pathways. Inhibition of MV replication could not be fully explained as a result of retinoid effects on cell differentiation, proliferation or viability, particularly at low retinoid concentrations (1-10nM). These data provide the first evidence that retinoids can directly inhibit MV in vitro, and raise the possibility that retinoids may have similar actions in vivo.

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