



IMT504: A New and Potent Adjuvant for Rabies Vaccines Permitting Significant Dose Sparing

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ABSTRACT

Background: Rabies virus infection causes encephalitis, which is almost always fatal. Vaccination can be extremely effective at preventing disease but is prohibitively costly. Vaccine formulations allowing dose-sparing and fewer inoculations with faster antibody response would be extremely desirable. IMT504, an immunostimulatory non-CpG oligo-deoxynucleotide, is a highly potent vaccine adjuvant. Methods: Human and rat antibody measurements, and rat challenge studies were performed. Results: In rats, highly effective immune responses with IMT504 were observed even after diluting vaccine up to 1/625. In highly lethal, live intracerebral rabies challenge studies, protection occurred even with extremely dilute vaccine plus IMT504. In humans, antibody titers developed faster and were significantly higher with IMT504-adjuvanted diluted vaccine vs non-adjuvanted vaccine (full strength or diluted). All five administered IMT504-adjuvanted diluted vaccine reached protective antibodies (≥ 0.5 IU/ml) after the second injection. After the third injection, individuals receiving IMT504-adjuvanted diluted vaccine reached levels approximately 10 times higher than controls ($M \pm SEM$: 31.0 ± 10.9 vs 3.40 ± 0.99 IU/ml). Conclusions: These data suggest that IMT504 may allow fewer inoculations, highly significant dose-sparing of vaccine, rapid antibody production and protection from rabies. Extensive clinical studies are necessary to confirm if the use of IMT504 will permit significantly greater access to highly effective life-saving rabies vaccines.

KEYWORDS

IMT504; Adjuvant; Rabies; Vaccine; Human; Animal

Cite this paper

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