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## Exploring the Ability of Inactivated F Genotype Mumps Vaccines to Enhance Immunogenicity in Rodents

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## DESCRIPTION

Mumps is a contagious disease caused by a virus that can lead to serious complications, including meningitis and deafness. To protect against mumps infection, immunization with inactivated F genotype mumps vaccine is recommended. The effectiveness of the inactivated F genotype mumps vaccine has been demonstrated in clinical trials, but its ability to enhance immunogenicity in rodents remains unknown. In this blog post, we will explore the ability of inactivated F genotype mumps vaccines to enhance immunogenicity in mice.

Mumps vaccines are either live attenuated or inactivated vaccines. Live attenuated mumps vaccine is highly effective and the most common form used for routine immunization. It contains a weakened form of the virus and induces an immune response similar to natural infection. On the other hand, an inactivated form of mumps vaccine contains killed viruses that induce an antibody response but not long-term immunity. Inactivated F genotype mumps vaccine has been approved for use since 2019 and is increasingly being used as an alternative option.

In pre-clinical studies, it has been found that vaccinations with inactivated F genotype mump vaccine can induce long-term protection against challenge infection when dosed with adjuvants such as aluminum hydroxide gel (alum) or polysorbate 80 (Tween 80). These adjuvants have been demonstrated to increase the potency of the vaccine by inducing a Th1-type immune response characterized by increased interferon gamma production and production of antibody isotypes associated with protective immunity.

In recent years, researchers have been studying the ability of inactivated F genotype mumps vaccines to enhance immunogenicity in rodents. The effectiveness of these vaccines has been demonstrated in various research studies, which have shown that the vaccines can increase antibody production and immunity in mice. These findings suggest that it may be possible to improve the immunogenicity of mumps vaccines, ultimately

providing better protection against this virus. In the year 2020, researchers tested an experimental modified-live mumps vaccine on a mouse model. They found that when given intranasally or intraperitoneally, the vaccine was able to induce mucosal and systemic immunity against mumps virus infection. Furthermore, they found that the intranasal route was more effective than the intraperitoneal one. This suggests that intranasal delivery could be more effective at inducing higher levels of immunity against mumps virus infection. Another study conducted in 2020 sought to test the ability of an inactivated F genotype mumps vaccine to protect mice from natural exposure to wild-type mumps virus. The results showed that vaccination provided some protection against natural exposure and reduced the severity of clinical symptoms compared to unvaccinated control mice. This suggests that an F genotype-based vaccine might offer some protection against wild-type mumps virus infections and could potentially be used as part of a broader strategy for controlling mumps outbreaks. Benefits of inactivated F genotype mumps vaccines for enhancing immunogenicity in rodents

Mumps vaccine has become an important tool in preventing and controlling mumps infections. The F genotype mumps vaccines are created to enhance immunogenicity when used in rodents. Studies have shown that rodents develop a better immune response against mumps viruses when given the F genotype vaccine compared to other vaccines. This improved immunogenicity can help protect the rodent from future exposures to the same virus. The F genotype mumps vaccine is an inactivated form of the virus, meaning it cannot cause infection but still stimulates a strong immune response. This type of vaccine is more effective at producing antibodies that can recognize, bind, and neutralize the virus compared to subunit vaccines or live attenuated forms. The use of an inactivated form of the mumps virus has several advantages compared to other types of vaccines for enhancing immunogenicity in mice. First, it offers long-lasting immunity than live attenuated forms since there is no risk of infection after administration. Second, it provides a stronger immune response due to its ability to activate

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both humoral and cellular components of immunity more effectively than other types.

In addition to provide an enhanced immune response for one strain of mumps viruses, studies suggest that the inactivated F genotype vaccination may also provide some cross-protection against different strains as well. This means that mice that are given the vaccine may experience some level of protection against future exposure even when they face a different strain than was present in the vaccine. Mumps vaccine is a common immunization used to protect against the mumps virus. However, as with any medical intervention, there are certain challenges and limitations when it comes to using inactivated F genotype mumps vaccines to enhance immunogenicity in rodents. This blog will explore these challenges and examine how they can be addressed in order to achieve greater effectiveness of the vaccine. One of the main problems with using an inactivated form of mumps vaccine is that it requires more doses to provide adequate protection than a live version of the same vaccine. This means that more injections are needed which can be inconvenient for patients and increase the potential for side effects. In addition, an inactivated form of the mumps vaccine may not produce a strong enough immune response to protect against infection. Challenge associated with using mumps vaccines on rodents is that they have relatively short lifespans compared to humans. This means that any immunity produced by the vaccine may not persist long enough for them to benefit from long-term protection from the virus. Additionally, rodents may not respond as expected when given a particular dose or formulation of a particular mumps vaccine.