不同微脂粒組成份包覆新城病毒(NDV)點鼻劑型疫苗之研究

The Research of Different Liposomes-encapsulated NDV Vaccine by Nasal Administration for Chickens

中文摘要

本研究以半包覆式微脂粒疫苗之點鼻劑型，包裹新城病毒活毒 LaSota 株(Newcastle disease virus, NDV)，利用不同組成分的微脂粒包覆新城病毒及降低疫苗施予之劑量，同時也設計一組在微脂粒疫苗載體表面修飾上覆蓋聚甘露醣(Mannan)形成「靶向式微脂粒疫苗」，期許能夠快速被黏膜下層之抗原呈現細胞所辨別進而胞吞以引發下一步之免疫反應。本實驗著重於血清及鼻黏膜抗體的產生以及攻毒試驗，觀測抗體生成的情況(抗體 IgG、IgA、IgM)、組織切片以及攻毒後的試驗結果。結果發現，利用給予一次或兩次疫苗微脂粒包覆新城病毒隻疫苗，發現施予兩次疫苗的實驗可有效引發雞隻在上呼吸道之抗體 IgA 與 IgG 產生，以及血清中有較高的 IgG。攻毒結果指出在低劑量微脂粒疫苗的免疫情況下，Lip-NDV-1/5、Man-Lip- NDV-1/5 與 Man-Lip-NDV-1/10 這三組亦能達到良好的保護效果。組織切片結果發現，攻毒前，微脂粒疫苗組別之組織切片中其可減緩新城病毒對雞隻肺臟鬱積；攻毒後，微脂粒疫苗之 PS-Lip-NDV、SA-Lip-NDV 和 Man-Lip-NDV 之組別相較於 NDV-only 組，發現微脂粒包覆新城病毒之疫苗有降低肺臟細胞壞死缺失之現象。因此，利用微脂粒包覆新城病毒之疫苗藉由點鼻的方式給予可引發較好的黏膜免疫的抗體產生以、良好的保護效果且能有效降低新城病毒強毒株對雞隻的傷害。

英文摘要

Newcastle disease virus, live LaSota strain, was encapsulated with semi- liposome vaccine and administrated by intranasal route. This study utilized different phospholipid compounds of liposomes to encapsulate Newcastle disease virus and decreased the dosage of liposomal vaccine. When coated with mannan on the surface of liposomes as “targeting liposome”, liposomal vaccines expect to recognize by antigen presenting cell in the nasal submucosa. This study focuses on the production of the serum and nasal mucosal antibody, tissue pathology, and the protection after challenging. The result of the test through primary or boost vaccination by liposome-encapsulated Newcastle disease virus indicated that the boost vaccination (two times) can produce antibody in chicken serum. Therefore, the result of protective efficacy after virulence challenge show that Lip-NDV-1/5, Man-Lip-NDV-1/5, and Man-Lip-NDV-1/10 groups can provide better protection than others. The results of histology, liposomal vaccine groups can reduce lung congestion before challenge; however, after the virulence NDV challenge, liposomal vaccines (ex: PS-Lip-NDV,

SA-Lip-NDV, and Man-Lip-NDV) can reduce lung necrosis and loss than NDV-only vaccine group. In conclusion, utilize liposome-encapsulated Newcastle disease virus vaccine can induce mucosal immunity, have better protection efficacy, and reduce the tissue damage than that of NDV-only vaccines by intranasal route.