

新城病疫苗檢定用攻毒株之評估試驗

動物用藥品檢定分所

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摘要

目前第七基因型新城病病毒為全世界流行的毒株，但國內新城病疫苗檢驗標準之效力試驗使用攻毒株為第三基因型佐藤株(Sato strain)，本研究目的為評估第七基因型新城病病毒是否可作為新城病活毒疫苗例行檢定之攻毒株使用，故進行該病毒感染於 SPF 雞隻之 LD₅₀ 及 MLD 試驗、傳染力試驗及合格活毒疫苗免疫 SPF 雞隻後之攻毒後保護力試驗。試驗場所為疫苗檢定動物舍(檢定舍)及獸醫基因改造產品動物舍(GMO 動物舍)。病毒 LD₅₀ 試驗結果為 $10^{10.5}$ LD₅₀/mL，病毒 MLD 試驗結果為 10^{10} MLD/mL。傳染力試驗結果為無論在檢定舍及 GMO 動物舍，雞隻攻毒後病毒會透過空氣快速傳播感染鄰近動物飼育室及半密閉式飼養籠裡的 SPF 雞隻，造成雞隻下痢、精神沉鬱、神經症狀至死亡，但此種情形未曾在佐藤株攻毒雞隻後出現。飲水免疫雞隻新城病活毒疫苗株別為 LaSota、B1、Clone30、VH、VG/GA、C2、Ulster 2C 及 6/10，其攻毒後保護力結果顯示 Ulster 2C 株與 6/10 株無法達到檢驗標準規定之 75%存活率，若依仿單用法為噴霧免疫，應可符合檢驗標準之規定。另外考量檢驗新城病疫苗每月 30 至 50 批，每批 10 至 12 隻之試驗雞隻數量，評估需要有千萬以上的經費，來增購動物飼養設備及改善動物舍生物安全防護設施。建議仍維持佐藤株做為檢定用攻毒株。

Evaluation of a challenge strain for Newcastle disease vaccine inspection

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Abstract

At present, the Newcastle disease virus (NDV) genotype VII strain is one of the most prevalent strains of NDV circulating worldwide, but currently the standard strain of Newcastle disease (ND) vaccine inspections via the efficacy test is the Sato strain of NDV genotype III. The purpose of this study was to evaluate whether the NDV genotype VII strain can be used as a challenge strain for the routine testing of ND vaccines. The NDV genotype VII strain was used to infect SPF chickens to determine the median lethal dose (LD_{50}), minimal lethal dose (MLD), transmission ability, and the survival rate of SPF chickens after immunization with live vaccines. The test was carried out in the vaccine inspection animal house (inspection animal house) and the veterinary genetic modification product house (GMO animal house). The LD_{50} and MLD of the virus was found to be $10^{10.5}$ LD_{50}/mL and 10^{10} MLD/mL , respectively. Transmissivity of the virus was found to proceed rapidly through the air and to successfully infect SPF chickens in an adjacent animal breeding room as well as in semi-closed cages, causing symptoms such as diarrhea, depression, neurological symptoms, and death. However, these symptoms were not present in SPF chickens challenged with the NDV Sato strain. The live vaccine strains of ND administered in drinking water to SPF chickens were LaSota, B1, Clone30, VH, VG/GA, C2, Ulster 2C and 6/10. The protective results after NDV genotype VII challenge showed that the Ulster 2C strain and 6/10 vaccine strains did not to meet the 75% survival rate specified by the inspection standard. However, spray-immunization may be a more effective route for administration. Moreover, we considered roughly 30 to 50 batches of ND vaccines for inspections per month, and the number of test chickens in each batch of 10 to 12 will require more than 10 million NT dollars for the purchase of animal feeding equipment and for the improvement of animal biosafety facilities. Nevertheless, we recommend that the Sato strain remains as a challenge strain for ND vaccine inspections.