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学位論文内容の要旨
Abstract of the dissertation

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博士の専攻分野の名称：博士（獣医学）　　　　　氏名：リ　トランク　キエン
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学位論文題名
The title of the doctoral dissertation

Study on the control of high pathogenicity
and low pathogenicity avian influenza in Vietnam
(ベトナムにおける高病原性および低病原性
鳥インフルエンザの制御に関する研究)

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This thesis study applies a multi-aspect approach for improving AI control strategy in Vietnam. By combining the virological and epidemiological studies, the findings of this thesis provide a new perspective for improving AI control and prevention.

The genetic diversity of LPAIV was assessed in Chapter I. A total of 1,361 AIVs of various subtypes were isolated in the surveillance from 2014 to 2018, in which H6 and H9 viruses were the dominant subtypes and H7N7 viruses were initially detected. The phylogenetic analysis of the HA genes revealed that Vietnamese H6 and H9 LPAIVs were classified into Group II and Y280/BJ94 sub-lineages, respectively, and clustered together with previous isolates in Vietnam and neighboring countries. H7 LPAIVs were clustered together with Cambodian isolates, but not with H7 LPAIVs previously isolated in Vietnam or Chinese H7N9 HPAIVs. The antigenicity of Vietnamese H6 and H7 viruses showed a slight diverse and formed into different antigenic groups from preexisting viruses, whereas H9 viruses isolated during the study period were almost identical. Therefore, to understand the pathogenesis of H6 and H9 LPAIVs in the field, experimental infection with or without other pathogens to poultry will be performed.

The identification of stakeholders' contributions that increase the likelihood of AIV isolation in individual birds was the target of Chapter II. In the study area, birds sampled from

PDSs had the highest prevalence (21.0%), followed by LBMs (14.0%), backyard farms (3.0%), and commercial poultry farms (0.6%). Adequate knowledge of AI was identified as a protective factor by demonstrating that respondents with a mixed (uncertain or inconsistent) level and a low level of knowledge about AI increased odds of birds being AIV positive compared to a good knowledge of AI respondents. These findings confirm the hypothesis that insufficient knowledge of AI might increase the risk of AIV positivity. To assist in this regard, the AI control strategy might focus more on LBMs and PDSs by providing appropriate education programs specifically designed for those in each enterprise.

The risk factors of LPAI in farms were investigated in Chapter III. A total of 2,019 AIVs were isolated from 2009 to 2019, with an overall prevalence of 7.7%. The distribution of subtypes differed between northern and southern Vietnam, with subtype H9 being the remarkably dominant subtype in the north, while H6 and H9 subtypes were equally circulating in the south. The epidemiological survey emphasized that raising aquatic birds, particularly Muscovy ducks, might increase the risk of LPAIV infection, whereas good behavior of reporting AI events and supporting AI control policy had a protective effect against LPAIV infection in farms. The differences in the distribution of host species in specific regions and the beliefs of the farmers in countermeasures implementation by the local authority indicated that locally specific control measures are effective for LPAIV circulation.

Finally, the necessity of AI control is undisputed but enhancing the effectiveness of countermeasures is a challenging task. Therefore, collaboration with multiple stakeholders employing different approaches should be the mainstream spirit in AI control strategy development.