

## Study on the Inhibition Effect of Kimchi Against Avian Influenza

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**Introduction:** The objective of this paper is antiviral effect of fermented radish kimchi by a change in substrate. Although previous paper demonstrated that kimchi was effective for health, antioxidant activity, improvement of immune, and so on, this is first time investigated in antiviral effect of fermented kimchi. In this study, attempt tried whether Kimchi show inhibitory effect against avian influenza virus in egg embryo model, especially in laboratory chicken.

**Materials and Methods:** To screening for each sample has an influence on mutated of embryo cell and cytotoxicity, 10-day-old specific pathogen free chicken eggs were inoculated by difference concentration, 23, 50 or 100 mg/ml respectively. Then eggs were incubated for 5 days and checked mortality every day. At 5 days, eggs were harvested and checked development, blood vessels, weight for embryo, and transparency of allantoic fluid. To examine effects of fermented Kimchi extracts for LPAI (H9N2), each extracts, were diluted to 50 mg/ml, combined with LPAI and incubated at 4, 25, 37°C for 60 min. After then 10-day-old eggs were inoculated with 0.2ml into allantoic cavity, incubated for 5 days at 37°C. At post-inoculation, egg fluids were collected and checked for hemagglutinin test and checked embryo. In vivo, one hundred SPF chickens were provided ad libitum. The three different groups divided normal diet, included 0.75% and 1.50% kimchi extracts. After 4 weeks of feeding, chickens were challenged with LPAI 10<sup>8.0</sup>EID<sub>50</sub>/ml.

**Results:** The purpose of this study was to examine whether Kimchi inhibits the avian influenza virus in vitro or vivo. We found that a 50% ethanol extracts of fermented Kimchi significantly inhibited the growth of avian influenza virus in a concentration-dependent manner in vitro. We also show here that a 50% ethanol extracts of fermented Kimchi inhibits expression of symptoms in chickens models. We demonstrated that extracts of Kimchi of suppression effects against avian influenza virus by antibody levels, survival rate and gain the body weight compared control.

**Conclusions:** In this study, extracts of fermented Kimchi inhibited the replication of avian influenza virus in eggs and it enhanced or advanced immune response in animal model by intake Kimchi containing diet. Therefore, it is necessary to research into the component of Kimchi for inhibition of avian influenza virus.

### References

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