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Reply to "Immunosuppression in a Comparative Study of Feline Leukemia Virus Vaccines"

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Our response to the comments on our recent publication in *Clinical and Vaccine Immunology* (1) is as follows. The authors state that the conclusions "are misleading and inconsistent with previous publications on the efficacy of canarypox-FeLV vaccine (2–5)." The first three references cited to support this claim did not use Purevax recombinant feline leukemia virus (FeLV) vaccine (which has a unique mutation within the envelope protein immunosuppressive domain) but used a vaccine not available in the United States (2–4). Later, the authors cite studies using the transdermal FeLV vaccine no longer available (5, 6). The only relevant paper cited using Purevax recombinant FeLV vaccine used a homologous challenge (Glasgow-1) 2 weeks postvaccination (7). In contrast, our study used a heterologous challenge (61E) 3 months postvaccination. Thus, while results from our study are inconsistent with publications on canarypox FeLV vaccines, only one paper cited is relevant. In that paper, a shorter challenge time frame and a homologous challenge are questionably relevant to vaccine field use.

The authors state that canarypox-vectored vaccines likely do not rely on antibodies and are dependent on a T-cell-mediated response; thus, immunosuppression may have a greater impact on Purevax recombinant FeLV vaccination. However, there are a number of studies showing that vaccination with killed, whole-virus adjuvanted vaccines does not induce virus-neutralizing antibodies before challenge, yet cats are still protected (8–10). In two of these studies, cats were immunosuppressed and were able to overcome infection (9, 10). Thus, T-cell-mediated responses should also be important for the immunosuppressed cats vaccinated with Nobivac Feline-2 FeLV. In addition, virus-neutralizing titers in this study were not evaluated; thus, the protective significance of the titers is unknown (1).

Cats that are at highest risk for FeLV infection (11) are often immunosuppressed. Elevated urine cortisol/creatinine ratios are seen in shelter and sick cats (12, 13), and concurrent illnesses are common (14, 15). Veterinary visits are stressful, and corticosteroids may be administered to vaccine reactors. Immunosuppression during FeLV challenge is an accepted methodology to ensure infection. Immune priming should not be impacted as long as sufficient time for the immune response (2 weeks) has elapsed before immunosuppression. In this study, immunosuppression occurred 3 months after booster vaccination. This has been supported in USDA licensing requirements for FeLV vaccines (16).

Thus, in this study, immunosuppression should have no effect on the formation of immunity. We do not know whether immunosuppression affects Purevax recombinant FeLV-vaccinated cats to a greater degree than Nobivac Feline-2 FeLV-vaccinated cats during challenge. However, if that is the case, this study shows that immunosuppressed cats are better protected upon FeLV exposure after vaccination with Nobivac Feline-2 FeLV than after vaccination with Purevax recombinant FeLV. The purpose of this study was to compare the efficacies of two commercially available vaccines. As the same vaccination and study conditions were applied to both groups, the efficacy of the Nobivac Feline-2 FeLV vaccine was far superior to that of Purevax recombinant FeLV vaccine and the conclusions remain the same.

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