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Immunochromatographic assay using gold nanoparticles for measuring salivary secretory IgA in dogs as a stress marker

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Abstract. The concentration of salivary secretory immunoglobulin A (sIgA) is a well-known stress marker for humans. The concentration of salivary sIgA in dogs has also been reported as a useful stress marker. In addition, salivary sIgA in dogs has been used to determine the adaptive ability of dogs for further training. There are conventional procedures based on enzyme-linked immunosorbent assay (ELISA) for measuring salivary sIgA in dogs. However, ELISA requires long assay time, complicated operations and is costly. In the present study, we developed an immunochromatographic assay for measuring salivary sIgA in dogs using a dilution buffer containing a non-ionic surfactant. We determined 2500-fold dilution as the optimum condition for dog saliva using a phosphate buffer (50 mM, pH 7.2) containing non-ionic surfactant (3 wt% Tween 20). The results obtained from the saliva samples of three dogs using immunochromatographic assay were compared with those obtained from ELISA. It was found that the immunochromatographic assay is applicable to judge the change in salivary sIgA in each dog. The immunochromatographic assay for salivary sIgA in dogs is a promising tool, which should soon become commercially available for predicting a dog's psychological condition and estimating adaptive ability for training as guide or police dogs.

Keywords: immunochromatographic assay, secretory immunoglobulin A (sIgA), nonionic surfactant, gold nanoparticles, stress marker

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