Specific Egg Yolk Antibody (IgY) as a Novel Supportive Immunotherapy for Periodontitis

Sa V. Nguyen

Immunoglobulin Y (IgY) is found in birds as the most important antibody in the serum and egg yolk. Due to its numerous advantages compared to other polyclonal antibodies, IgY has been considered a very promising novel supportive immunotherapy and preventive tool for oral diseases especially periodontitis.

*Porphyromonas gingivalis*, an anaerobic bacterium known to be a major causative agent of periodontitis, produces a protease enzyme called gingipain. Gingipain is accumulated on the surface of *P. gingivalis* cells or secreted by the bacterium into the surrounding environment. This enzyme degrades various tissues in the oral cavity causing inflammation and gingivitis/periodontitis.

Our group used gingipain from *P. gingivalis* to hyperimmunize layer chickens and prepare specific anti-gingipain IgY (called Ovalgen PG). The efficacy of IgY was examined by using experimental animal models and on periodontitis patient volunteers. On Sprague-Dawley rats infected with *P. gingivalis* Ovalgen PG resulted in significant reduction of bone loss compared to the control group. On dogs with chronic gingivitis and periodontitis, Ovalgen PG administration improved key oral health parameters including gingivitis and periodontitis scores, BOP, tarter removal and foul breath score. On periodontitis patients, applying Ovalgen PG directly to the gum pockets after SRP reduced the probing depth, BOP, and levels of *P. gingivalis* at 4 weeks as compared with SRP treatment only.

The above results indicate that anti-gingipain IgY is a promising novel tool for prevention and treatment of periodontitis.