Pasteurellosis Vaccine Commercialization: Physiochemical Factors for Optimum Production

ABSTRACT

Pasteurella spp. are Gram-negative facultative bacteria that cause severe economic and animal losses. *Pasteurella*-based vaccines are the most promising solution for controlling *Pasteurella* spp. outbreaks. Remarkably, insufficient biomass cultivation (low cell viability and productivity) and lack of knowledge about the cultivation process have impacted the bulk production of animal vaccines. Bioprocess optimization in the shake flask and bioreactor is required to improve process efficiency while lowering production costs. However, its state of the art is limited in providing insights on its biomass upscaling, preventing a cost-effective vaccine with mass-produced bacteria from being developed. In general, in the optimum cultivation of *Pasteurella* spp., production factors such as pH (6.0–8.2), agitation speed (90–500 rpm), and temperature (35–40 °C) are used to improve production yield. Hence, this review discusses the production strategy of *Pasteurella* and *Mannheimia* species that can potentially be used in the vaccines for controlling *pasteurellosis*. The physicochemical factors related to operational parameter process conditions from a bioprocess engineering perspective that maximize yields with minimized production cost are also covered, with the expectation of facilitating the commercialization process.