

Arranee Chotigo 2009: Production of Pelleted Feed Containing *Lactobacillus reuteri* KUB-AC5 by Cold Pelleting Process. Master of Science (Biotechnology), Major Field: Biotechnology, Department of Biotechnology. Thesis Advisor: Associate Professor Penkhae Wanchaitanawong, Ph.D. 111 pages.

Lactobacillus reuteri KUB-AC5 isolated from chicken intestines is a potential probiotic supplement in chicken feed. *L. reuteri* KUB-AC5 incorporated into feed ingredients with various contents of modified starch (1%, 2% and 3% w/w) and fresh liquid culture (20%, 25% and 30% v/w) or spray dried *L. reuteri* KUB-AC5 (1%w/w) were mixed prior to the pelleting process at ambient temperature. The wet pellets were then hot air-dried at 40°C and 50°C. To obtain the pellet moisture of ca. 8%, the optimum drying times were 8 h and 4 h at 40°C and 50°C, respectively. The physical quality of the pellet was evaluated in term of pellet hardness. It was ranking of 55 to 107 N, depending on modified starch content. Pellet hardness was increased with increasing the modified starch content. Moreover, the addition of protective agents such as CMC and sodium alginate were found to increase pellet hardness (ca. 107 N for CMC and 95 N for sodium alginate). After drying at 40°C and 50°C, the viability of *L. reuteri* KUB-AC5 was decreased approximately 1-2 log cycles. The results also showed that pellet with 1% and 2% modified starch demonstrated the highest viable cell after drying at 40°C and 50°C, respectively. Furthermore, to enhance viability of the strain during drying, protective agents were added into the cell suspension. From results, pelleted feed with 20% milk powder showed the highest survival of 30.85% and 20.73% after drying at 40°C and 50°C, respectively. The viability of *L. reuteri* KUB-AC5 was also evaluated during storage in aluminum seal bag at 4°C and 30°C. During storage at 4°C for 150 days, the viability of all samples was quite stable with viable cell of ca. 10^7 - 10^8 cfu/g depending on type of protective agent. While, the viability of the strain with and without protective agent during storage at 30°C was absolutely lost within 60 and 30 days, respectively. Similar results were observed when spray-dried *L. reuteri* KUB-AC5 was used. The viability of spray-dried *L. reuteri* KUB-AC5 was also quite stable during storage at 4°C and the 2% modified starch showed the highest survival (51.28% for 40°C and 27.58% for 50°C). During 30°C storage, the survival of the strain was also completely lost within 60 days.

Student's signature

Thesis Advisor's signature