Tropentag, September 17-19, 2018, Ghent

"Global food security and food safety:
The role of universities"

Investigation of the Growth Ability of Probiotic(lactobacillus and *Bifidobacterium*) in Infant's Milk under Different Environmental Conditions

Shaden A. Almojel, Jehan Albrahim, Afrah Eltayeb Mohammed

P.N.U. Princess Nourah Bint Abdulrahman University, Saudi Arabia

Abstract

In the present investigation five species of probiotic bacteria, which belong to Lactobacillus(L. reautari, L. rhamnosus, *L. acidophilus*), *Bifidobacterium* (L. casei, L. helveticus, B. bifidum) wereevaluated for their growth in dried infant's milk. Three kinds of milk which is used for healthy infantsand two other kinds which are widely spread and commonly used for unhealthy breastfeedinginfants (vomiting and diarrhea).The study has clearly indicated that all the probiotics employed inthis investigation have grown in all milk types to which the nutrient MRS medium was added as wellas for the tested milk types without any additives. Findings showed that the optimal time period foradequate growth of probiotic ranges from 12 to 24 hours. Furthermore, it was found that duringincubation period of the tested probiotics the pH was in the range of 7.20 to 7.87 for all the milktypes tested. It was generally observed that changes in pH were meager during the first 8 hoursafter incubation and then pH started to decrease reaching a value of d" 4 with the increase ingrowth until the end of incubation period (i-e, 72 hours). The current results also showed that theoptimal temperature for adequate growth of probiotics investigated is 37 °C whereas the leasttemperature is 5 °C. Variation in pH had a limiting effect on bacterial growth. Results showed thatthe best probiotic growth was detected at pH 6 and the least growth was at pH 11. Furthermore,the maximum growth levels at 55 % relative humidity, except L. helveticus bacteria for which thehighest growth rate was recorded at 75 % RH and growth of the tested probiotics was decreasedat RH of 35 % and 100 %.

Keywords: *Bifidobacterium*, infant milk, lactobacillus, pH, probiotic, temperature

Contact Address: Jehan Albrahim, P.N.U. Princess Nourah Bint Abdulrahman University, Alnarjes Aria, 11474 Riyadh, Saudi Arabia, e-mail: jsaa242@hotmail.com