

5. CONCLUSÃO

As estirpes de *Bifidobacterium breve* (UFVCC 1083, UFVCC 1091, UFVCC 1099, UFVCC 1103, UFVCC 1105, UFVCC 1108 e UFVCC 1111) de origem humana, utilizadas na presente experimentação, não promoveram efeitos adversos na saúde geral dos animais testados, uma vez que não induziram toxicidade oral crônica (não promovendo crescimento anormal do fígado, rins, coração e baço dos animais estudados) e nem promoveram translocação de bactérias do trato gastrointestinal para outros órgãos após 21 dias de tratamento. No entanto, recomenda-se a realização da mesma experimentação com outros mamíferos, incluindo humanos saudáveis, antes da implantação dessas estirpes nos bancos de leite humano. Recomenda-se também, verificar a toxicidade oral aguda, ministrando concentrações mais elevadas do *pool* probiótico por um menor tempo.

CONCLUSÃO GERAL

As 31 estirpes de *Bifidobacterium breve* isoladas de recém-nascidos apresentaram susceptibilidade variável aos 14 antibióticos avaliados, sugerindo que este fenótipo é estirpe dependente. No entanto, observou-se que a maioria das estirpes foram sensíveis aos antimicrobianos, o que é uma característica de segurança importante no processo de seleção desses isolados para uso como probiótico em bancos de leite humano, devido a possibilidade de transferência do genes de resistência no ambiente intestinal.

Os isolados de *Bifidobacterium breve* avaliados nesta experimentação apresentaram uma variabilidade na sua ação antagonista sobre *Clostridium difficile*, *Staphylococcus aureus*, *Escherichia coli*, *Salmonella typhimurium* e *Listeria monocytogenes* pelo método “spot”. Verificou-se também que essa inibição foi estirpe dependente e não promovida somente por ácidos orgânicos, uma vez que não foi totalmente revertida quando utilizou-se meio tamponado. O efeito da substância inibitória somente foi detectado em meio sólido (método “spot”), sugerindo a necessidade de um fator de indução, como por exemplo, o contato com o microrganismo patogênico, para que esse seja expresso. Essa experimentação corrobora a necessidade de utilização de mais de uma técnica na avaliação do efeito antagonista de bactérias probióticas sobre patógenos, uma vez que os mecanismos envolvidos no antagonismo são diferentes.

As estirpes de *Bifidobacterium breve* de origem humana selecionadas para composição do *pool* probiótico (UFVCC 1083, UFVCC 1091, UFVCC 1099, UFVCC 1103, UFVCC 1105, UFVCC 1108 e UFVCC 1111), utilizadas na presente experimentação, não promoveram efeitos adversos na saúde geral dos animais testados, uma vez que não induziram toxicidade oral crônica (não promovendo crescimento anormal do fígado, rins, coração e baço dos animais estudados) e nem promoveram translocação de bactérias do trato gastrointestinal para outros órgãos após 21 dias de tratamento. No entanto, recomenda-se a realização da mesma experimentação com outros mamíferos, incluindo humanos saudáveis, antes da implantação dessas estirpes nos bancos de leite humano. Recomenda-se também, verificar a toxicidade

oral aguda, ministrando concentrações mais elevadas do *pool* probiótico por um menor tempo.

REFERÊNCIAS BIBLIOGRÁFICAS

- ABEE, T., ROMBOUTS, F. M., HUGENHOLTZ, J., GUIHARD, G. & LETELLIER, L. Mode of action of nisin Z against *Listeria monocytogenes* Scott A grown at high and low temperatures. **Appl. Environ. Microbiol.**, 60, 1962-1968. 1994.
- ADAWI, D., AHRNÉ, S., GÖRAN, M. Effects of different probiotic strains of *Lactobacillus* and *Bifidobacterium* on bacterial translocation and liver injury in na acute liver injury model. **International Journal of Food Microbiology** 70, 213-220, 2001.
- ALAKOMI, H. L., SKYTТА, E., SAARELA, M., MATTILA-SANDHOLM, T., LATVA-KALA, K., HELANDER, I. M. Lactic acid permeabilizes gram-negative bacteria by disrupting the outer membrane. **Appl. Environ. Microbiol**, 66, 2001-2005, 2000.
- AL-LAWATI, A., CROUCH, N.D. AND ELHAG, K. M, Antibiotic consumption and development of resistance among gram-negative bacilli in intensive care units in Oman. **Annals of Saudi Medicine**, 20(2-3):324-327. 2000.
- AMANT, D.C., VALENTIN-BON, I.E. AND JERSE, A.E. Inhibition of *Neisseria gonorrhoeae* by *Lactobacillus* species that are commonly isolated from the female genital tract. **Infect. Immun.** 70, 7169–7171, 2002.
- ARAKI, T., SHINOZAKI, T., IRIE, Y., & MIYAZAWA, Y., Trial of oral administration os *Bifidobacterium breve* for the prevention of rotavirus infection. *Jornal of Japanese Association of Infectious Diseases* 1999., 73: 305-310. In: HARSHARNJIT, S.G., Probiotics to enhance anti-infective defences in the gastrointestinal tract. *Nutrition Research*. VOL 17, N°5, p. 755-773, 2003.
- ARANOW, J. S., FINK, M. P. Determinants of intestinal barrier failure in critical illness. **British Journal of Anaesthesia**, 77: 71-81, 1996.
- ARNOLD, L. D.W., LARSON, E. Immunologic beneffts of breast milk in relation to human milk banking. **American Journal Infect Control** 21, 235-242, 1993.

- AROUTCHEVA, A., GARITI, D., SIMON, M., SHOTT, S., FARO, J., SIMOES, J.A., GURGUIS, A. AND FARO, S. Defense factors of vaginal lactobacilli. **Am. J. Obstet. Gynecol.** 185, 375–379, 2001.
- ARUNACHALAM, K. D., Role of Bifidobacteria in nutrition, Medicine and Technology. **Nutrition Research** Vol 19. Nº 10 pp.1559-1597, 1999.
- ASAHARA, T., NOMOTO, K., WATANUKI, M. AND YOKOKURA, T. Antimicrobial activity of intraurethrally administered probiotic *Lactobacillus casei* in a murine model of *Escherichia coli* urinary tract infection. **Antimicrob. Agents Chemother.** 45, 1751–1760, 2001.
- AUSTIN, D. J., KRISTINSSON, K. G., ANDERSON, R. M. The relationship between the volume of antimicrobial consumption in human communities and the frequency of resistance. **PNAS** 96, 1152–1156, 1999.
- BARBOSA, H.M, TORRES B.B, FURLANETO M.C. **Microbiologia Básica.** Ed. Atheneu, São Paulo, 1998.
- BAWER, A.W., KIRLY. W. M. M, SHERRIS, J. C., TURK, M., Antibiotic susceptibility testing by standardized single disk method. **American Journal of Clinical Pathology** 45, 493-493, 1966.
- BAYER, A. S., CHOW, A. W., BETTS, D. AND GUZE, L. B. Lactobacillemia report of nine cases, important clinical and therapeutic considerations. **American Journal of Medicine** 64, 808- 813, 1978.
- BENGMARK, S. Ecological control of the gastrointestinal tract. The hole of probiotic flora. **Gut**, v.42, 2-7, 1998.
- BERG, R. D. Bacterial Translocation From Gastrointestinal Tract. **Trends in Microbiology** vol.3 nº 4, 149-154, 1995.
- BERG, R. D. Promotion of the translocation of enteric bacteria from the gastrointestinal tract of mice by oral treatment with penicillin, clindamycin, or metronidazole. **Infect. Immun.** 33, 851-861, 1981.
- BERG, R. D. The intestinal microflora in health and disease, **Academic Press** 333-352, 1983.
- BERG, R. D. Translocation and the indigenous gut flora. **Scientif basis of probiotic concept**, 55-85, 1992.
- BERG, R. D., BERNASCONI, P., FOWLER, D., GAUTREAUX, M. Inhibition of *Cândida albicans* translocation from the gastrointestinal tract of mice

- by oral administration of *Saccharomices boulardii*. **Journal Infect. Dis.** 168, 1314-1318, 1993.
- BERG, R. D., GARLINGTON, A. W. Translocation of certain indigenous bacteria from the gastrointestinal tract to mesenteric lymph nodes and other organs in a gnotobiotic mouse model. **Infection and Immunity** 23, 403-411, 1979.
- BERG, R. Inhibition of *Escherichia coli* translocation from the gastrointestinal tract by normal cecal flora in gnotobiotic or antibiotic decontaminated mice. **Infect. Immun** 29, 1073-1081, 1980.
- BERNET, M.F., BRASSART, D., NEESER, J.R. AND SERVIN, A.L. *Lactobacillus acidophilus* LA 1 binds to cultured human intestinal cell lines and inhibits cell attachment and cell invasion by enterovirulent bacteria. **Gut** 35, 483–489, 1994.
- BERNET-CAMARD, M.-F., LIEVIN, V., BRASSART, D., NEESER, J.-R., SERVIN, A.L., HUDAULT, S. The human *Lactobacillus acidophilus* strain LA1 secretes a nonbacteriocin antibacterial substance(s) active in vitro and in vivo. **Appl. Environ. Microbiol.** 63, 2747–2753, 1997.
- BEVILACQUA, L., OVIDI, M., DI MATTIA, E., TROVATELLI, L. D., CANGANELLA, F. Screening of *Bifidobacterium* strains isolated from human faeces for antagonistic activities against potentially bacterial pathogens. **Microbiological Research**, 158, 179-185, 2003.
- BEZIRTZOGLU, E. The intestinal Microflora During the first weeks of life. **Anaerobe** 3, 173-177, 1997.
- BORBA, L. M., CASTRO, L. C.V., FANCESCHINE, S. C. C., FERREIRA, C. L. L. F. Composição do leite humano e microbiota predominantemente bífida de lactente em aleitamento materno exclusivo. **Nutrire**, v. 25, nº1, 135-154, 2003.
- BORRIELLO, S. P., HAMMES, W. P., HOLZAPFEL, W., MARTEAU, P., SCHRENMEIR, J., VAARA, M., VALTONEN, V. Safety of Probiotics That Contain Lactobacilli or Bifidobacteria. **Clinical Infectious Diseases** 36, 775-780, 2003.
- BROOK, I., MACVITTIE, T.J., and WALKER, R. I., Recovery of aerobic and anaerobic bacteria from irradiated mice. **Infection and Immunity**; 46: 270–271, 1984

- BROOKS, G. F., BUTEL, J. S. & MORSE, S. A. **Microbiologia Médica**, 21 ed., Rio de Janeiro: Guanabara Koogan S.A., p. 117-141, 2000.
- BRUNO, F.A., SHAH, N.P. Inhibition of pathogenic and putrefactive microorganisms by *Bifidobacterium* sp. **Milchwissenschaft**, 57, 617–621, 2002.
- BUYNAK, J. D., Understanding the longevity of the β -lactam antibiotics and antibiotic/ β -lactamase inhibitor combinations, **Biochemical Pharmacology**, 8890: 11-22, 2005.
- BYEZKOWSKI, J., GESSNER, T., Biological role of superoxide ion-radical. **International Journal of Biochemistry**, 20, 569-580, 1988.
- CHARTERIS, W. P., KELLY, P. M., MORELLI, L., & COLLINS, J. K, Selective detection, enumeration and identification of potentially probiotic *Lactobacillus* and *Bifidobacterium* species in mixed bacterial population. **International Journal of Food Microbiology** 35, 1-27. 1997.
- CHARTERIS, W. P., KELLY, P. M., MORELLI, L., COLLINS, J. K. Antibiotic susceptibility of potentially probiotic *Bifidobacterium* isolates from the human gastrointestinal tract. **Let. Appl. Microbiol.**, v. 26, 333-337, 1998.
- CHRISTIAN, S.S, CHRISTIAN, J. F., The cephalosporin antibiotic. **Elsevier Science**, 1068-607, 168-174, 1997.
- CHULADA, P.C., ARABES S.J. Jr, DUNSON, D., ZELDIN, D.C., Breast-Feeding and the prevalence of asthma and wheeze in children: analyses from the third National Health and Nutrition Examination Survey. **Allergy clin Immunol**, v. 111, p.328-336, 2003.
- CLEVELAND, J., MONTVILLE, T. J., NES, I. F., CHIKINDAS, M. L. Bacteriocins: safe, natural antimicrobials for food preservation. **International Journal of Food Microbiology**, 71, 1-20, 2001.
- COCONNIER, M.H., LIEVIN, V., BERNET-CAMARD, M.F., HUDAULT, S. AND SERVIN, A.L. Antibacterial effect of the adhering human *Lactobacillus acidophilus* strain LB. **Antimicrob. Agents Chemother.** 41, 1046–1052, 1997.
- COLLADO, M. C., HERNANDEZ, M., SANZ, Y. Production of Bacteriocin-Like Inhibitory Compounds by Human Fecal *Bifidobacterium* Strains. **Journal of Food Protection** vol 68, nº5 pp 1034-1040, 2005a.

- COLLADO, M.C., GONZÁLEZ, A., GONZÁLEZ, R., HERNÁNDEZ, M., FERRÚS, M.A., SAZ, Y., Antimicrobial peptides are among the antagonistic metabolites produced by *Bifidobacterium* against *Helicobacter pylori*. **International Journal of Antimicrobial Agents**, 25, p. 385-391, 2005b.
- COLLINS, M.D. e GIBSON, G.R. Probiotics, prebiotics and synbiotics: approaches for modulating the microbial ecology of the gut. **Am J. Clin. Nutr.**, v69 (suppl), p. 1052S-1057S, 1999.
- COMMANE, D., HUGHES, R., SHORTT, C., ROWLAND, I. The potential mechanisms involved in the anti-carcinogenic action of probiotics. **Mutation Research** 591, 276-289, 2005.
- CONDE, M. R. G. Translocação e desaparecimento de células viáveis de *Lactobacillus acidophilus* em baço, fígado, rins e coração de ratos. Universidade Federal de Viçosa, 2001 56p. (Tese MS)
- COUSOUDIS, A., PILLARY, K., SPOONER, E., KUHN, L., COOVADIA, H.M Influence of infant-feeding patterns on early mother-to-child transmission of HIV-1, 2003. In: American Academic Of Pediatrics. Breastfeeding and the use of human milk, **Pediatrics**, v. 115, nº2, 2005.
- CROCIANI, F., ALESSANDRINI, A, MUCCI, M. M . BIAVATI, B., Degradation of complex carbohydrates by *Bifidobacterium spp.* **International Journal of Food Microbiology** 24, 199-210, 1994.
- DANIELSEN, M; WIND, A. Susceptibility of *Lactobacillus ssp.* to antimicrobial agents. **International Journal of Food Microbiology** 82, 1-11, 2003.
- DEITCH, E. A. Multiple organ failure: pathophysiology and potencial future therapy. **Ann. Surg.** 216, 117-134, 1992.
- DUFFY, L. C., ZIELEZNY, M. A., RIEPENHOFF-TALTY, M., DRYJA, D., SAYAHTAHERI-ALTAIE, S., GRIFFITHS, E., RUFFIN, D., BARRETT, H., ROSSMAN, J., OGRA, P.L. Effectiveness of *Bifidobacterium bifidum* in mediating the clinical course of murine rotavirus diarrhea. **Pediatr. Res.**, 35: 690-695, 1994.
- DUGGAN, C., GANNON, J., WALKER, W. A., Protective nutrients and functional foods for the gastrointestinal tract. **American Journal of clinical nutrition**, 75, p. 789-808, 2002.

- EIZAGUIRRE, I., URKIA, N. G., ASENSIO, A. B., ZUBILAGA, P., VIDALES, C., ARENZANA, J. M. G., ALDAZABAL, P., Probiotic supplementation reduces the risk of bacterial translocation in experimental short bowel syndrome. **Journal of Pediatric Surgery** vol 37, nº 5, p.699-702, 2002.
- FERREIRA, C. L. L. F. **Prebióticos e Probióticos: Atualização e Prospecção** Ed. Suprema Gráfica e Editora, 1ª ed, Viçosa-MG, 2003.
- FLEMING, H. P., ETCHELLS, J.L., COSTILOW, R.N., Microbial inhibition by na isolate of *Pediococcus* from cucumber briner. **Applied Microbiology** ;30(6):1040-2, 1975.
- FOOKS, L. J ., GIBSON, G. R., Probiotics as modulators of the gut flora. **Br. J. Nutr.** 88, 39-49, 2002.
- FOOKS, L. J., FULLER, R., GIBSON, G. R Prebiotics, probiotics and human gut microbiology. **International Dairy Journal**, 9, 53-61, 1999.
- FOOKS, L. J., GIBSON, G. R., Mixed culture fermentation studies on the effects of synbiotics on the human intestinal pathogens *Campylobacter jejuni* and *Escherichia coli*, **Anaerobe**, 9: 231-242, 2003.
- FORESTIER, C., DE CHAMPS, C., VATOUX, C. AND JOLY, B. Probiotic activities of *Lactobacillus casei rhamnosus*: in vitro adherence to intestinal cells and antimicrobial properties. **Res. Microbiol.** 152, 167–173, 2001.
- FUJIWARA, S., HASHIBA, H., HIROTA, T., FORSTNER, J. F., Proteinaceous factor(s) in culture supernatant fluids of bifidobacteria which prevents the binding of enterotoxigenic *Escherichia coli* to gangliotetraosylceramide. **Applied end Environmental Microbiology**, 63, 506-512, 1997.
- FULLER, K. G., BERG, R. D., Microflora Control and its Applications to the Biomedical Sciences (Wostmann, B. S., ed), pp. 195-198, Alan R. Liss 1985. In: BERG, R. D. Bacterial translocation from the gastrointestinal tract. **Trends in Microbiology** 149, v. 3. nº 4, 1995.
- FULLER, R. **History and development of probiotics. In: R Fuller (Ed) Probiotics.** The Science basis. New York. Chapman and hall, p. 111-144, 1992.

- GAGNON, M., KHEADR, E. E., LE BLAY, G., FLISS, I. In vitro inhibition of *Escherichia coli* O157:H7 by bifidobacterial strains of human origin. **International Journal of Food microbiology**, 92, 69-78, 2004.
- GARNEAU, S., MARTIN, N. I., VEDERAS, J. C. Two-peptide bacteriocins produced by lactic acid bacteria. **Biochimie**, 84, 577-592, 2002.
- GASSER, F. Safety of lactic-acid bacteria and their occurrence in human clinical infections. **Bulletin de L'Istitut Pasteur**, 92: 45-67. 1994.
- GAUTREAUX, M. D., DEITCH, E. A, BERG, R. D **Microecol. Ther** 20, 31-34, 1990.
- GAUTREAUX, M. D., DEITCH, E. A., BERG, R. D., **Infect Immun** 62, 2874-2884, 1993.
- GIBSON, G. R., ROBERFROID, M. B. Dietary Modulation of the Human Colonic Microbiota: Introducing the Concept of Prebiotics. **Journal of Nutrition** 125, 1401-1412 1995.
- GIBSON, G. R., WANG, X. Regulatory effects of Bifidobacteria on the growth other colonic bacteria. **Journal of Applied Bacteriology** 7, 412-420, 1994.
- GIUGLIANI, E. R. J. Rede Nacional de Bancos de Leite Humano do Brasil: Tecnologia para Exportar. **Jornal de Pediatria** v. 78, nº3, 2002.
- GOLDING J, Unnatural constituents of breast milk: medication, lifestyle, pollutants, viruses. **Early Human Development**, v. 49: S29-S43, 1997. (Suppl.).
- GOMES, A. M. P., MALCATA, F. X. *Bifidobacterium spp.* and *Lactobacillus acidophilus* biological, biochemical, technological and therapeutical properties relevant for use as probiotics. **Trends in Food Science & Technology** 10, 139-157, 1999.
- GONZÁLEZ-MARTÍNEZ, B. E. TREVIÑO, M. G., JIMÉNEZ-SALAS, Z. Bacteriocinas de probióticos. **Revista de la Facultad de Salud Pública y Nutrición**, Vol 4 No.2 , 2003.
- GOODMAN, L. S.; GILMAN, A. **As bases farmacológicas da terapêutica**. 8^aed. Rio de Janeiro: Guanabara Koogan, 1991. 1232p.
- GRIFFIN, I. J., DAVILA, P. M., ABRAMS, S. A., Non-digestible oligosaccharides and calcium absorption in girls with adequate calcium intakes, **British Journal of Nutrition**, 87, 187-191, 2002.

- GUARNER, C., RUNYON, B. A., YOUNG, S., HECK, M., SHEIKH, M. Y. Intestinal bacterial overgrowth and bacterial translocation in cirrhotic rats with ascites. **Journal of Hepatology**, 26, 1372-1378, 1997.
- GUARNER, C., SORIANO, G., TOMAS, A., BULBENA, O., NOVELLA, M., BALANZO, J., VILARDELL, F., MOURELLE, M., MONCADA, S. Increased serum nitrite and nitrate in patients with cirrhosis of the liver: relationship to endotoxemia. **Hepatology**, 18, 1139-1143, 1993.
- GUARNER, F., MALAGELADA, J. R., Gut flora in health and disease. *Lancet*, 361, 512-519, 2003.
- GUYTON, A. C. **Fisiologia Humana**, 6. ed., Rio de Janeiro: Guanabara Koogan, 348p, 1988.
- GUYTON, A. C. **Fisiologia Humana**, 9. ed., Rio de Janeiro: Guanabara Koogan, 1013, 1997.
- HARSHARNJIT, S. GILL. Probiotics to enhance anti-infective defences in the gastrointestinal tract. **Best Practice & Research Clinical Gastroenterology** Vol 17, Nº 5, pp 755-773, 2003
- HATA, D., YOSHIDA, A, OHKUBO, H., Meningitis caused by *Bifidobacterium* in infant. **Pediatr. Infect. Dis. J.**, v. 7, 669-671, 1988.
- HEINIG, M. J., Host defense benefits of breastfeeding for the infant effect of breastfeeding duration and exclusivity. **Pediatr. Clin. North. Am.** 48, 105-123, 2001.
- HILTON, E., RINDOS, P., & ISENBERG, H.D *Lactobacillus GG* vaginal suppositories and vaginitis. **Jornal of Clinical Microbiology**, 33, 1433. 1995.
- HOYOS, A. B. Reduced incidence of necrotizing enterocolitis associated with enteral administration of *Lactobacillus acidophilus* and *Bifidobacterium infantis* to neonates in an intensive care unit. **International Journal of Infectious Diseases**, 3, 197-202. 1999.
- HUIS IN'TVELD, J.H.J., SHORTT, C. Selection criteria for probiotic microorganisms. In: LEEDS, A.R., ROWLAND, I.R. Ed . **Gut Flora and Healthc – past, present and future**. Internacional Congress and Symposium 219, Royal Society of Medicine Press Limited p.27-36.1996.
- IBRAHIM, S., BEZKOROVAINY, A., Inhibition of *Escherichia coli* by bifidobacteria. **Journal of Food Protection**, 56, 713-715, 1993.

- ISHIBASHI, N., YAMAZAKI, S. Probiotics and Safety. **Journal Clin Nutr** 73 (suppl):465S-70S, 2001.
- ISOLAURI, E. Probiotics: effects on immunity. **Am. J. Clin. Nutr.** 73, 444-450, 2001.
- ISOLAURI, E., ARVOLA, T., SUTAS, Y, MOILANEN, E., & SALMINEN, S. Probiotics in the management of atopic eczema. **Clinical and experimental allergy**, 30, 1604-1610. 2000.
- JUNIOR, M. A. S, FERREIRA, E. S, CONCEIÇÃO, G. C., Betalactamases de espectro ampliado (ESBL): um importante mecanismo de resistência bacteriana e sua detecção no laboratório clínico. **NewsLab**, edição 63, 2004.
- KABIR, A. M., AIBA, Y., TAKAGI, A, KAMIYA, S., MIWA, T., KOGA, Y. Prevention of *Helicobacter pylori* infection by lactobacilli in a gnotobiotic murine model. **Gut**, 41, 49-55, 1997.
- KALLIOMAKI, M., SALMINEN, S., ARVILOMMI, H., KERO, P., KOSKINEN, P., ISOLAURI, E., Probiotics in primary prevention of atopic disease: a randomised placebo-controlled trial. **Lancet**, 357. 1076-1079, 2001
- KASHKET, E. R., Bioenergetics of lactic acid bacteria: Cytoplasmic pH and osmotolerance. **FEMS Microbiology Reviews**, 46, 233-244, 1987.
- KHEADR, E., BERNOUSSI, N., LACROIX, C., FLISS, I. Comparison of the sensibility of commercial strains and infant isolates of bifidobacteria to antibiotics and bacteriocins. **International Dairy Journal** 14, 1041-1053, 2004.
- KIM, K, PICKERING, K, DUPONT, H.L, SULLIVAN, N, WILKINS, T. In vitro and in vivo neutralizing activity of human colostrum and milk against purified toxins A and B of *Clostridium difficile*. **J Infect Diseases**, v. 150, 57-62, 1984.
- KLAENHAMMER, T. R., Bacteriocins of lactic acid bacteria. **Biochemie** 70, 337-349, 1988.
- KLEIN, G., PACK, A., BONAPARTE, C. AND REUTER, G. Taxonomy and physiology of probiotic lactic acid bacteria. **International Journal of Food Microbiology** 41, 103-125, 1998.

- KOPP-HOOLIHAN, L, Prophylactic and therapeutic uses of probiotics: A review. **Journal of American Dietetic Association**, 101, 229-238 quiz 239-241, 2001.
- KOROIKOVAS, A.; BURCKHALTER, J. H. **Química farmacêutica**. Rio de Janeiro: Guanabara Koogan,1988. 783p.
- KUNZ C, RODRIGUEZ-PALMERO M, KOLETZKO B, JENSEN R. Nutritional and biochemical properties of human milk, part I: general aspects, proteins and carbohydrates. **Clin Perinatol**, v. 26, 307-333, 1999.
- LAWRENCE, R.A, LAWRENCE, R.M. Breastfeeding: A Guide for the Medical Profession. **St Louis**, 1999.
- LAZDUNSKI, C.J. Pore-forming colicins: synthesis, extracellular release, mode of action, immunity. **Biochimie** 70, 1291–1296, 1988.
- LEHTO, E.M. AND SALMINEN, S.J. Inhibition of *Salmonella typhimurium* adhesion to Caco-2 cell cultures by *Lactobacillus strain* GG spent culture supernate: only a pH effect? **FEMS. Immunol. Med. Microbiol.** 18, 125–132, 1997.
- LIÉVIN, V., PEIFFER, I., HUDAULT, S., ROCHT, F., BRASSART, D., NEESER, J. R., SERVIN, A.L. *Bifidobacterium* strains from resident infant human gastrointestinal microflora exert antimicrobial activity. **Gut**, 47, 646-652, 2000.
- LIM, K. S., HUH, C. S. AND BAEK, Y. J, Antimicrobial susceptibility of bifidobacteria. **J. Dairy Sci.** 76, 2168-2174. 1993.
- LIN, S. Y., CHEN, C. T., Reduction of cholesterol by *Lactobacillus acidophilus* in culture broth. **Journal Food Drug Anal.**, 8, 97-102, 2000.
- LJUNGDAHL, M., LUNDHOLM, M., KATOULI, M., et al. Bacterial translocation in experimental shock is dependent on the strains in the intestinal flora. **Scandinavian Journal of Gastroenterology**; 35: 389–397, 2000.
- LUCAS, A, COLE, T. J. Breast milk and neonatal necrotising enterocolitis. **Lancet**, 336: 1519-1523, 1990.
- MA, L., DEITCH, E., SPECIAN, R., STEFFEN, E., BERG, R., Translocation of *Lactobacillus murinus* from the gastrointestinal tract. **Curr. Microbiol**, 20, 17-184, 1990.

- MACKIE, R. I., SGHIR, A., GASKINS, H. R. Developmental microbial ecology of the neonatal gastrointestinal tract. **Am. J. Clin. Nutr.**, v.69, 1035S-1045S, 1999.
- MAEJIMA, K., DEICH, E. A and BERG, R. D. Promotion by burn stress of the translocation of bacteria from the gastrointestinal tracts of mice. **Arch. Surg**, 119, 166-172, 1984.
- MAKRAS, L., DE VUYST, L. The in vitro inhibition of Gram-negative pathogenic bacteria by bifidobacteria is caused by the production of organic acids. **International Dairy Journal**, 2005.
- MAN, J.C. DE; ROGOSA, M.; SHARPE, M.E.,. A medium for the cultivation of Lactobacilli. **Journal of Applied Bacteriology**, v.23, p.130-135, 1960.
- MASTROMARINO, P., BRIGIDI, P., MACCHIA, S., MAGGI, L., PIROVANO, F., TRINCHIERI, V., CONTE, U. AND MATTEUZZI, D. Characterization and selection of vaginal *Lactobacillus* strains for the preparation of vaginal tablets. **J. Appl. Microbiol.** 93, 884–893, 2002.
- MATTILA-SANDHOLM, T., SALMINEN, S. Up-to-date on probiotics in Europe. **Gastroenterol. Int.** 11, 8–16. 1998
- MAY, J.T., Human milk- tables of the antimicrobial factors and microbiological contaminants relevant to human milk banking, 1998.
- MEGHROUS, J., EULOGE, P., JUNELLES, A. M., BALLONGUE, J., PETITDEMANGE, H. Screening of *Bifidobacterium* strains for bacteriocin production. **Biotechnol. Lett.** 12, 575-580, 1990.
- MICHETTI, P., DORTA, G., WIESEL, P.H., BRASSART, D., VERDU, E., HERRANZ, M., FALLEY, C., PORTA, N., ROUVET, M., BLUM, A.L., CORTHESEY-THEULAZ, I.. Effect of whey-based culture supernatant of *Lactobacillus acidophilus* (*johnsonii*) La1 on *Helicobacter pylori* infection in humans. **Digestion** 60, 203–209, 1999.
- MIDOLO, P. D., LAMBERT, J. R., HULL, R., LUO F., GRAYSON, M. L. In vitro inhibition of *Helicobacter pylori* NCTC 11637 by organic acids and lactic acid bacteria. **J. App. Bacteriol.**, 79: 475-479, 1995.
- MILLER, L. G., FINEGOLD, S. M.,. Antibacterial sensibility of *Bifidobacterium* (*Lactobacillus bifidus*). *Journal of Bacteriology*, 93, 125-130, 1967.
- MITSUOKA, T. Bifidobacteria and their role in human health. **Journal of Industrial Microbiology** 6, 263-268, 1990.

- MITSUOKA, T. Intestinal flora and human health. Asia Pacific. **J. Clin. Nutr.** V.1, p.2-9, 1996.
- MITSUOKA, T. Microbes in the intestine- our lifelong partners Yakult Honsha Co., Std Tokyo, 1989, 104 p.
- MITSUOKA, T. Recente trends in research on intestinal flora. Bididobacteria and Microflora, v.1, p.3-24, 1982.
- MITSUOKA, T., Intestinal bacteria and health, Tokyo: Harcourt Brace Jovarnovich Japan, 1978, 208p.
- MITSUOKA, T., Intestinal flora and aging. **Nutr. Rev.**, v.50, 438-446, 1992.
- MODLER, H. W. Bifidogenics Factors – Sources, metabolism and **Applications. International Dairy Journal** 4, 383-407, 1994.
- MONTVILLE, T. J., WINKOWSKI, K., LUDESCHER, R. D., Models and mechanisms for bacteriocin action application. **International Dairy Journal**, 5, 797-814, 1995.
- MOREHOUSE, J., SPECIAN, R., STEWART, J., BERG, R. D. Promotion of translocation of indigenous bacteria of mice from the GI tract by oral ricinoleic acid, **Gastroenterology** 91, 673-682 (1986).
- MOUBARECK, C., GAVINI, F., VAUGIEN, L., BUTEL, M. J., DOUCET-POPULAIRE, F. Antimicrobial susceptibility of bifidobacteria. **Journal of Antimicrobial Chemotherapy**, 55, 38-44. 2005.
- MURRAY, P. R., ROSENTHAL, K. S., KOBAYASHI, G. S. & PFALLER, M. A. Microbiologia Médica, 3 ed., Rio de Janeiro: Guanabara Koogan S.A., p. 135-141, 2000.
- NAKAZAWA, T., KANEKO, K., TAKAHASHI, H., INOUE, S. Neonatal meningitis caused by *Bifidobacterium breve*. **Brain & Development**, v.18, 160-162, 1996.
- NEWMANN, E., FERREIRA, C. L. L. F. *Lactobacillus acidophilus* as dietary adjunct “in vitro” susceptibility to gastric juice, bile salts, lysozyme and chemotherapeutic agents. **Revista de Microbiologia**, v.26, p.59-65, 1995.
- NICAS, T. I., COLE, C. T., PRESTON, D. ^a, NAGARAJAN, R., Activity of glycopeptides against vancomycin-resistant Gram positive bacteria. **Antimicrobial Agents and Chemotherapy** 33, 1477-1481, 1989.

- OGAWA, M., SHIMIZU, K., NOMOTO, K., TAKAHASHI, M., WATANUKI, M., TANAKA, R., TANAKA, T., HAMABATA, T., YAMASAKI, S. AND TAKEDA, Y. Protective effect of *Lactobacillus casei ssp Shirota* on Shiga toxin-producing *Escherichia coli* O157:H7 infection in infant rabbits. **Infect. Immun.** 69, 1101–1108, 2001.
- OZBAS, Z. Y., AYTAC, S. A. Behaviour of *Yersinia enterocolitica* and *Aeromonas hydrophila* in yogurt made with probiotic bacteria: *Bifidobacterium infantis* and *Lactobacillus acidophilus*. **Milchwiss**, 50, 626-629, 1995.
- PAIVA NETTO, J. V. Antibióticos e quimioterápicos em medicina veterinária. Rio de Janeiro: Livraria Atheneu, 1989. 181p.
- PATHMAKANTHAN, S., MEANCE, S., & EDWARD CA. Probiotics: a review of human studies to date and methodological approaches. **Medical Ecology in Health and disease** 10-13. 2002
- PERDIGON, G., FULLER, R., RAYA, R. Lactic acid bacteria and their effect on the immune system. **Curr. Issues Intest. Microbiol**, 2, 27-42, 2001.
- PEREZ, P.F., MINNAARD, J., ROUVET, M., KNABENHANS, C., BRASSART, D., DE ANTONI, G.L. AND SCHIRIN, E.J. Inhibition of *Giardia intestinalis* by extracellular factors from lactobacilli: an in vitro study. **Appl. Environ. Microbiol.** 67, 5037–5042, 2001.
- PODOLAK, P. K., ZAYAS, J. F., KASTNER, C. L., FUNG, D. Y. C. Inhibition of *Listeria monocytogenes* and *Escherichia coli* O157:H7 on beef by application of organic acids. **Journal of Food Protection**, 59, 370-373, 1996.
- QUINTILIANI, R. Jr, SAHM, D. F, COURVALIN, P, Mechanism of resistance to antimicrobial agents, 1999. In: MONBARECK, C., GAVINI, F., VAUGIEN, L., BUTEL, M. J, POPULAIRE-DOUCET, F. Antimicrobial susceptibility of bifidobacteria. **Journal of Antimicrobial Chemotherapy** 55, 38-44. 2005.
- RAMOS, M. P.P, CUNHA, L.. R., MALDONADO, I. C. S. C., CARLOS, I. Z., FERREIRA, C. L. L. F. Influência da ingestão de *Bifidobacterium breve* na determinação das citocinas IL-4, e IL-6, INF γ , PNF α e compostos intermediários do nitrogênio (NO) e do oxigênio H₂O₂, 2006 *no prelo*.

- RENNE, M., KALLIOMAKI, M., ARVILOMMI, H. Effect of probiotic and breastfeeding on the *Bifidobacterium* and *Lactobacillus/Enterococcus* microbiota and humoral immune responses. **Journal of Pediatrics**, v.147, 186-191, 2005.
- RIORDAN, K. O., FITZGERALD, G. F., Determination of genetic diversity within the genus *Bifidobacterium* and estimation of chromosomal size. **FEMS Microbial. Lett.**, v. 156, p.259-264, 1997.
- ROBREDO, B., SINGH, K. V., BAQUERO, R., MURRAY, B. E., TORRES, C. Vancomycin-resistant enterococci isolated from animals and food. **Int. J. Food Microbiol.** 54, 197–204, 2000.
- SAARELA, M., MOGENSEN, G., FONDEN, R., MATTO, J., MATTILA-SANDHOLM, T., Probiotic bacteria: safety, functional and technological properties. **Journal of Biotechnology** 84, 197-215, 2000.
- SAAVEDRA, J. M., BAUMAN, N. A., OUNG, I., PERMAN, J. A., YOLKEN, R. H. Feeding of *Bifidobacterium bifidum* and *Streptococcus thermophilus* to infants in hospital for prevention of diarrhoea and shedding of rotavirus. **Lancet.**, 344: 1046-1049, 1994.
- SALMINEN, S., ISOLAURI, E., SALMINEN, E., Clinical uses of probiotics for stabilizing the gut mucosal barrier: Successful strains and future challenges. **Antonie Van Leeuwenhoek**, 70: 347-358, 1996.
- SATTERWHITE, T. K., EVANS, D. G., DUPONT, H. L., et al. Role of *Escherichia coli* colonisation factor antigen in acute diarrhoea. **Lancet**; 181–184, 1978.
- SCARDOVI, V. In: Sneath PHA, Mair NS, sharpe me AND Holt JG, eds. *Bergey's Manual of Systematic Bacteriology*, Baltimore, MD: Williams and Wilkins., vol: 1418-1434. 1986
- SCHIFFRIN, E. J., BRASSART, D., SERVIN, A. L., ROCHAT, F., DONNET-HUGHES, A. Immune modulation of blood leukocytes in humans by lactic acid bacteria: criteria for strains selection. **Am. J. Clin. Nutr.** 66, 515-520, 1997.
- SEEHOFER, D., RAYES, N., SCHILLER, R., STOCKMANN, M., MULLER, A. R., STOCKMANN, M., et al Probiotics partly reverse increased bacterial translocation after simultaneous liver resection and colonic anastomosis in rats. **Journal of Surgery Research** 117, 262-271, 2004.

- SERVIN, A. L., Antagonistic activities of lactobacilli and bifidobacteria against microbial pathogens. **Microbiology Reviews**, 28, 405-440, 2004.
- SGORBATI, B., BIAVATI, B. E PALENZONA, D. The genus *Bifidobacterium*. Em Wood, B. J. B. e Holzapfel, W. H. (eds), The Lactic Acid Bacteria Vol. 2. The Genera of Lactic Acid Bacteria, capítulo 8, pp. 279-306, Blackie Academic, Londres, RU. 1995.
- SHORTT, C., The probiotic century: historical and current perspectives. Trends in Food Science and Technology 10, 411-417, 1999.
- SHU, Q., ZHOU, J. S., RUTHERFURD, K. J., BIRTLES, M. J., PRASAD, J., GOPAL, P. K., GILL, H. S. Probiotic lactic acid bacteria (*Lactobacillus acidophilus* HN017, *Lactobacillus rhamnosus* HN001 and *Bifidobacterium lactis* HN019) have no adverse effects on the health of mice. **International Dairy Journal** 9, 831-836, 1999.
- SILVA, C.H.P.M., Bacteriologia: um texto ilustrado, Teresópolis: Eventos, p. 107-119, 1999.
- SILVA, T. M. O que são radicais livres. 2003. Acesso em 15 Fev. 2006. Disponível em <www.medstudents.com.br/content/resumos/trabalhos_radicais_livres>.
- SINGHAL, A, FAROOQI, I.S, O'RAHILLY, S., COLE, T.J, FEWTRELL, M., LUCAS, A. Early nutrition and leptin concentrations in later life. **Am clin Nutr**, v. 75, 993-999, 2002
- SLOCUM, M. M., SITTIG, K. M., SPECIAN, R. D. Absence of intestinal bile promotes bacterial translocation. **American Surgeon** 58, 305-310, 1992.
- SNIJDERS, J. M., VAN LOGTESTIJN, J. G., MOSSEL, D. A. A., SMULDERS, F. J. M. Lactic acid as a decontaminant in slaughter and processing procedures. **Veterinary Quarterly**, 7, 27-282, 1985.
- SOUZA, D. F. M. C.; FERREIRA, C. L. L. F. ; SOUZA, A. V. C., COSTA, N. M. B., YBARRA, L. M., AZEREDO, E. M. C. Translocação de *Lactobacillus acidophilus* em ratos alimentados com dieta rica em colesterol e ácido fólico suplementada com probiótico. **Ciência e Tecnologia de Alimentos**, Campinas, v. 24, n. 04, p. 522-526, 2004.

- SPAETH, G., BERG, R. D., PPECIAN, R. D., AND DEITCH, E. A, Food without fiber promotes bacterial translocation from the gut. **Surgery**, 108, 240-247, 1990.
- SPAETH. G., GOTTWALD, T., SPECIAN, R. D., MAINOUS, M. R., BERG, R. D., DEITCH, E. A. Secretory immunoglobulin A, intestinal micin, and mucosal permeability in nutritionally-induced bacterial translocation in rats. **Ann. Surg.** 220, 798, 1994.
- SREEKUMAR, O., HOSONO, A. The antimutagenic properties of a polysaccharide produced by *Bifidobacterium longum* and its cultured milk against some heterocyclic amines. **Can. J. Microbiol**, 44, 1029-1036, 2003.
- STEFFEN, E. K., BERG, R. D., and DEITCH, E. A. **J. Infect. Dis** 157, 1032-1037, 1988.
- STRUS, M., PAKOSZ, K., GOSCINIAK, H., PRZONDO-MORDARSKA, A., ROZYNEK, E., PITUCH, H., MEISEL-MIKOLAJCZYK, F. AND HECZKO, P.B. Antagonistic activity of *Lactobacillus* bacteria strains against anaerobic gastrointestinal tract pathogens (*Helicobacter pylori*, *Escherichia coli*, *Campylobacter jejuni*, *Clostridium difficile*). **Med. Dosw. Mikrobiol.** 53, 133–142, 2001.
- SUZUKI, T., ITOH, K., KANEKO, T., SUZUKI, H. Inhibition of bacterial translocation from the gastrointestinal tract of mice by oral admistration of a culture condensate of *Bifidobacterium longum*. **J. Vet. Med. Science.** 59 (8): 665-669, 1997.
- SWANK, G. M., DEITCH, E. A., Role of the gut in multiple organ failure: Bacterial translocation and permeability changes. **World. J. Surg.** 20, 411-417, 1996.
- SZAJEWSKA, H., MRUKOWICZ, J. Z, Probiotics in the tratament and prevention of acute infectious diarrhea in infants and children. **Jornal of Pediatric Gastroenterology and Nutrition**, 33, p 17-25 2001.
- TAGG, J. R., DAJANI, A. S., WANNAMAKER, L. W., Bacteriocins of Gram positive bacteria. **Bacteriol. Rev.** 40, 722-756, 1976.
- TANAKA, R., AND SHIMOSAKA, K., Investigation of the stool frequency in elderly who are bedridden and is improvement by ingesting of bifidus yorgut. **J. Geriar.** 19:577-582, 1982.

- TANNOCK. G. W. Probiotics – a critical review. England: Horizon Scientific Press, 1999, p. 5-14, 1999.
- TAVARES, W. **Manual de Antibióticos e Quimioterápicos Antiinfeciosos**. São Paulo: Atheneu, 1990.
- TAVARES, W. **Manual de antibióticos e quimioterápicos antiinfeciosos**. 3ª ed. São Paulo: Atheneu, p. 292, 2001.
- TESHIMA, E. Seleção de Bactérias Bífidas Isoladas de Lactentes e Modulação da Microbiota Intestinal por Meio de Probióticos, Prebióticos e Simbióticos, Universidade Federal de Viçosa, 2001 113p. (Tese DO).
- TESHIMA, E., BORBA, L., RAMOS, M. P. P., CUNHA, L. R., FERREIRA, C. L. L. F. Bactérias Bífidas Endógenas Probióticas para Uso em Bancos de Leite Humano. I Congresso Mineiro de Alimentação e Nutrição – A Ciência por um Brasil sem Fome. 2005.
- TICHACZEK, P. S., NISSEN-MEYER, J., NES, I. F., VOGEL, R. F., HAMMES, W. P. Characterization of the bacteriocins curvacin A from *Lactobacillus curvatum* LTH1174 and sakacin P from *Lactobacillus sake* LTH673. **Sys. Appl. Microbiol** 15, 460-468, 1992.
- TISSIER, H., Le Bacterium coli et le réaction chromophilr d' Escherich. C. R. Soc. Biol. 51:943, 1899.
- TORTORA G. J, FUNKE B. R, CASE C. L. Microbiologia. Ed. Artes Médicas Sul, 6ªed, Porto Alegre, 2000.
- TOSIN I. Avaliação do modo de disseminação da resistência bacteriana a antibacterianos nos hospitais brasileiros. São Paulo; s. n; [137] p. 2001.
- TOURÉ, R., KHEADR, E., LACROIX, C., MORONI, O., FLISS, I Production of antibacterial substances by bifidobacterial isolates from infant stool active against *Listeria monocytogenes*. **Journal od Apllied Microbiology**, 95, 1058-1069, 2003.
- TOZZI, A.E, PEZZOTTI, P., GRECO, D., Does breastfeeding delay progression to AIDS in HIV-infected children? **AIDS**, v.4:1, 293-400, 1990.
- VASSEUR, C., BAVAREL, L., HEBRAUD, M., LABADIE, J., Effect of osmotic alkaline, acid or thermal stresses on the growth and inihibition of *Listeria monocytogenes*. **Journal of Applied Microbiology**, 86, 469-476, 1999.

- VELRAEDS, M. C., VAN DER MEI, H. C., REID, G., BUSSCHER, H. J. Inhibition of initial adhesion of uropathogenic *Enterococcus faecalis* by biosurfactants from *Lactobacillus* isolates. **Appl. Environ. Microbiol.** 62, 1958–1963, 1996.
- VIEIRA, G. O., SILVA, L. R., VIEIRA, T. O. Alimentação infantil e morbidade por diarreia. **J. Pediatr**, 79(5), 449-454, 2003.
- WALSH, C. Molecular mechanisms that confer antibacterial drug resistance. **Nature**; 406: 775-81, 2000.
- WELLS CL. Relationship between intestinal microecology and the translocation of intestinal bacteria. **Antonie van Leeuwenhoek**, 58: 87–93, 1990.
- WELLS, C. L., JECHOREK, R. P., ERLANDSEN, S. L. Inhibitory effects of bile on bacterial invasion of enterocytes: possible mechanism for increased translocation associated with obstructive jaundice. **Critical Care Medicine** 23, 301-307, 1995.
- WELLS, C. L., MADDUS, M. A., SIMMONS, R. L. Role of the macrophage in the translocation of intestinal bacteria. **Archives of Surgery** 122, 48-53, 1987.
- WIEST, R., RATH, H. C. Bacterial Translocation in the Gut. **Best Practice & Research Clinical Gastroenterology** vol 17, nº 73, 397-425, 2003.
- WILLIAMS, R., STEHLIN, I., Breast milk or formula: making the right choice for your baby, Adapted from FDA consumer, 2005.
- WILMORE, D. W., SMITH, R. J., O'DWYER, S. T., JACOBS, D. O., ZIEGLER, T. R., WANG, X. The gut: a central organ after stress. **Surgery** 104, 917-923, 1988.
- WORK GROUP ON BREASTFEEDING AMERICAN ACADEMY OF PEDIATRICS. Breastfeeding and the use of human milk. **Pediatrics**, v. 100, 1035-1039, 1997.
- WRIGHT, A. V, Regulating the Safety of Probiotics. The European Approach. **Current Pharmaceutical Design**, 11, 17-23. 2005.
- YASID, A. M, ALI, A. M, SHUHAIMI, M., KALAIVAANI, V., ROKIAH, M. Y., REEZAL, A. Antimicrobial susceptibility of bifidobacteria. **Letters in Applied Microbiology** 31, 57-62, 2000.

- YASUI, H., Shida, K., Matsuzaki, T. and Yokokura, T. Immunomodulatory function of lactic acid bacteria. **Antonie Van Leeuwenhoek** 76, 383–389, 1999.
- YILDIRIM, Z., JOHNSON, M. G., Characterization and antimicrobial spectrum of bifidocin B, a bacteriocin produced by *Bifidobacterium bifidum* NCFB 1454. **Journal Food Protection**, 61, 47-51, 1998.
- YILDIRIM, Z., WINTERS, D. K., JOHNSON, M. G. Purification amino acid sequence and mode of action of bifidocin B produced by *Bifidobacterium bifidum* NCFB 1454. **Journal of Applied Microbiology**, 86, 45-54, 1999.
- YIM HÁ, G., YANG, C. H., KIM, H., CHONG, Y. Case of sepsis caused by *Bifidobacterium longum*. **J. Clin. Microbiol.**, v. 37, 1227-1228, 1999.
- YOLKEN, R.H, PETERSON, J.A VONDERFECHT, S.L., FOUTS, E. T, MIDDTHUN, NEWBURG, D.S. Human milk mucin inhibits rotavirus replication and prevents experimental gastroenteritis. **J. Clin. Invest**, v. 90, p.1984-1991, 1992.
- YOUNG, R. J., HUFFMAN, S., Probiotic Use in Children . **Journal Pediatric Health Care**. 17 p 277-283, 2003.
- ZHOU, J. S, PILLIDGE, C. J, GOPAL, P. K, GILL, H. S. Antibiotic susceptibility profiles of new probiotic *Lactobacillus* and *Bifidobacterium* strains. **International Journal of Food Microbiology** 98, 211-217. 2005.
- ZHOU, J. S., SHU, Q., RUTHERFURD, K. J., PRASAD, J., GOPAL, P. K., GILL, H. S. Acute oral toxicity and bacterial translocation studies on potentially probiotic strains of Lactic acid bacteria. **Food and Chemical Toxicology** 38, 153-161, 2000a.
- ZHOU, J. S., SHU, Q., RUTHERFURD, K. J., PRASAD, J., GOPAL, P. K., GILL, H. S. Safety assessment of potential probiotic lactic acid bacterial strains *Lactobacillus rhamnosus* HN001, *Lb. acidophilus* HN017, and *Bifidobacterium lactis* HN019 in BALB/c mice. **International Journal of Food Microbiology** 56, 87-96, 2000b.