ANTIBIOTIC SUSCEPTIBILITY OF POTENTIALLY PROBIOTIC HUMAN FAECAL LACTOBACILLI

Tejpal Dhewa[1]*, Shailja Pant[1] and Lokendra Singh[2]

**Department of Microbiology,*
Dolphin (PG) Institute of Biomedical and Natural Sciences,
Dehradun-248007 Uttarakhand
[2]238, Prabhat Nagar, Meerut (UP)
**Corresponding Author, e-mail: tejpal_dhewa07@rediffmail.com*

Abstract: Bacteria of the genus Lactobacillus have been proposed as probiotic microorganisms to restore the ecological equilibrium of the gastrointestinal tracts (GIT). The aim of the present study is to determine the antibiotic susceptibility of six human faecal probiotic lactobacilli. The disc diffusion method was performed in Mueller Hinton, LAPTg and MRS agars by the NCCLS (National Committee for Clinical Laboratory Standards) procedure was performed. Due to the absence of a Lactobacillus reference strains, the results were compared to those of *Staphylococcus aureus* MTCC 740. Antibiotic sensitivity was determined with 12 different antibiotics in LAPTg agar, MRS agar and MHA. All human faecal Lactobacilli were sensitive to Chloramphenicol, Ciprofloxacin, Gentamicin, Lincomycin, Pefloxacin, Streptomycin, Intermediate to Kanamycin and resistant to Ampicillin. *Lactobacillus plantarum* (Hef24) and *L. casei* (Hef19) were found resistant to Vancomycin and Rifampicin. *L. fermentum* (Hef2), and *L.plantarum* (Hef4), were found intermediate resistant to Vancomycin. *L. casei* (Hef 19) is only exception that is resistant to Pefloxacin. *L. plantarum* (Hef 24) and *L. casei* (Hef 19) are only two strain resistant to Rifampicin. *L. fermentum* (Hef 3), *L. plantarum* (Hef 24) and *L. casei* (Hef 19) are three strain which are resistant to Vancomycin. The NCCLS method needs to be standardized in an appropriate medium to determine the antimicrobial susceptibility of Lactobacillus. Faecal probiotic lactobacilli do not display uniform susceptibility to antibiotics. Resistance to Ampicillin suggests that lactobacilli could be simultaneously used as a probiotic with Diarrheal treatment. However, the NCCLS procedure needs to be standardized for this genus.

Key words: Antibiotics, Lactobacilli, Probiotics.

REFERENCES

Bauer, A.W.; Kirby, M.M.; Sherris, J.C. and Tuurck, M. (1966). Antibiotic susceptibility testing by a standarized single disk method. *American Journal of Clinical Pathology.* **45**:493–496.

De Man J.C.; Rogosa M. and Sharpe M.E. (1960). A medium for the cultivation of lactobacilli. *Journal of Applied Bacteriology.* **23**: 130–135.

Fuller, R. (1992). Probiotics: their development and use. In: Fuller R, Heidt PJ, Rusch V, Van der Waaij D, eds. *Probiotics: Prospects of Use in Opportunistic Infections.;* Herborn Dill, Germany: Institute.

Hammes, W.; Weiss, N. and Holzapfel, W. (1995). The genera *Lactobacillus* and *Carnobacterium*. In: knmm..Balows A, Tr¨uper H, Dworkin M, Harder W, Schleifer KH, eds. *The Prokaryotes. A Hand book on the Biology of Bacteria: Ecophysiology, Isolation, Applications. Vol II.* 2nd ed. New York, NY: Springer,1536–1594.

Oca˜na, V.; Bru, E.; de RuizHolgado, AAP and Nader-Mac´ıasME (1999). Surface characteristics of lactobacilli isolated from human vagina. *Journal of General and Applied Microbiology.* **45** (5): 203–212.

Ocana, V.; Silva, C. and Nader-Macıas, M.E. Antibiotic Susceptibility of Potentially Probiotic Vaginal Lactobacilli. *Infectious Diseases in Obstetrics and Gynecology*, Volume 2006, Article ID 18182, Pages 1–6, DOI 10.1155/IDOG/2006/ 18182.

Raibaud, P.; Galpin, J.V.; Duclezeau, R.; Mocquot, G. and Oliver, G. (1963). Le Genre *Lactobacillus* dans le tube digestif du rat. II. Caracters de souches heterofermentaires isolates de rats. “holo” et “gnotoxeniques”. AnnMicrobiologie. *Annales de Microbiologie (Annales de L’Institute Pasteur).* **124**: 2223–2235.

Redondo-Lopez, V.; Cook, R.L. and Sobel, J.D. (1990). Emerging role of lactobacilli in the control and maintenance of the vaginal bacterial microflora. *Reviews of Infectious Diseases.* **12** (5):856–872.

Simoes, J.A.; Aroutcheva, A.A.; Shott, S. and Faro, S. (2001). Effect of metronidazole on the growth of vaginal lactobacilli in vitro. *Infectious Diseases in Obstetrics and Gynecology.* **9** (1):41–45.