THE SENSITIVITY TO ANTIBIOTICS OF SOME *LACTOBACILLUS SALIVARIUS* STRAINS ISOLATED FROM DENTAL ROOT CANAL AND TWO *LACTOBACILLUS* PROBIOTIC STRAINS

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Abstract

In this work the sensitivity of two Lactobacillus salivarius strains isolated from dental root canal (G1 and G2) and two Lactobacillus probiotic strains by intestinal origin: Lactobacillus salivarius probiotic and Lactobacillus rhamnosus GG, against different antibiotics has been examined. All of them were found to be very sensitive (Ø ≥25mm) to rifampicin and penicillin, whereas, all were resistant to acid nalidixic and streptomycin. These data show that cultures should be tested for their antibiotic sensitivity before being used as probiotics or in food industry.

Keywords: *dental root canal, Lactobacillus salivarius, probiotic.*

INTRODUCTION

Some mechanisms regarding antibiotic resistance are known at different bacteria.

-The genes acquired from bacteria which encode enzymes such as lactamases that inactivate the antimicrobial substance before it exerts an effect.

-The efflux pumps of some bacteria can extrude the antimicrobial agent from the cell before it arrives to the target site.

-The final products of some metabolic pathway (genetic acquired by the bacteria) can alter the cell wall and the binding site for antimicrobial agent.

The lactic bacteria can contain several antibiotic resistance genes that can be transferred to pathogenic bacteria.

MATERIALS AND METHODS

Antibiotic sensitivity of two *Lactobacillus salivarius* strains isolated from dental root canal (G1 and G2) and two *Lactobacillus* probiotic strains by intestinal origin: *Lactobacillus salivarius* probiotic and *Lactobacillus rhamnosus* GG was evaluated using the disc diffusion method. Inhibition zone was measured in mm.

RESULTS AND DISSCUTIONS

The obtained data are shown in table 1.

Table 1. The inhibition zone diameter expressed in mm

ANTIBIOTIC	Symbol	L. salivarius probiotic	G 1	G 2	LGG
Ampicilin	AMP	20	15	13	0
Chloranphenicol	C 10	26	20	22	18
Streptomycin	S 10	0	0	0	0
Rifampicin	RD 30	>30	25	26	>30
Nalidixic acid	NA 30	0	0	0	0
Novobiocin	NV	15	0	12	13
Erytromicyn	E 10	18	20	21	22
Penicilin	P 2	30	25	27	25

All investigated *Lactobacillus* strains were resistant to nalidixic acid and streptomycin. These data are according with Hummel et al. (2007) which reported that lactobacilli seem to be intrinsically resistant to quinolones (nalidixic acid). Danielsen and Wind (2003) and Zhou et al. (2005) also reported that some lactobacilli have a high natural resistance to streptomycin. *Lactobacillus rhamnosus* GG was resistant to ampicillin and *Lactobacillus salivarius* G1 strain isolated from dental root canal manifested resistance to novobiocin.

All strains were very sensitive (Ø of inhibition zone ≥25mm) to rifampicin and penicillin. Danielsen and Wind (2003) reported that lactobacilli generally seem to be sensitive to penicillin.

CONCLUSIONS

Major differences regarding antibiotic sensibility between the *Lactobacillus salivarius* strains with dental origin and the probiotic strains were not observed.

All *Lactobacillus* strains were resistant to nalidixic acid and streptomycin.

All strains showed a high sensitivity to penicillin and rifampicin.

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REFERENCES

Danielsen M. and A. Wind, 2003- Susceptibility of Lactobacillus sp. to antimicrobial agents. International Journal of Food Microbiology, 82, 1-11.

Hummel, A. S., C. Hertel, W. H. Holzapfel, and C. M. A. P. Franz. 2007.

Antibiotic resistances of starter and probiotic strains of lactic acid bacteria. Applied Environmental. Microbiology 73:730–739.

Zhou J.S., C.J. Pillidge, P.K. Gopal and H.S. Gill 2005. Antibiotic susceptibility profile of new probiotic *Lactobacillus* and *Bifidobacterium* strains. International Journal of Food Microbiology, 98:211-217