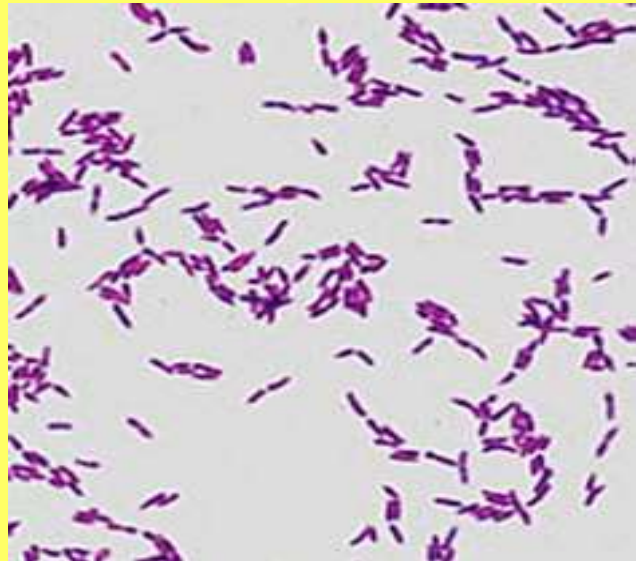




Evaluation of oral application of a probiotic *Lactobacillus reuteri* strain in patients with chronic periodontitis

Anna K. Szkaradkiewicz, Anna Surdacka,
Izabela Chudzicka-Strugała, Andrzej Szkaradkiewicz

University of Medical Sciences in Poznań, Poland





Background

In earlier studies an antagonistic effect was demonstrated of *Lactobacillus* strains toward periopathogens (23rd ECCMID, Berlin, Germany, 2013, abstr. R2536). Therefore, this study aimed at evaluation of clinical indices (SBI, PPD, CAL) and pro-inflammatory cytokine response (TNF- α , IL-1 β and IL-17) in gingival crevicular fluid (GCF) of patients with chronic periodontitis administered per os with a probiotic strain of *Lactobacillus reuteri*.



Patients

The studies were performed on 24 patients with chronic periodontitis (35-49 years of age) and on 14 healthy individuals (with inactive caries) aging 20-42 years. The following investigated groups were distinguished:

Group 1 including 24 patients with moderate chronic periodontitis;

Group 2 including 14 healthy individuals, no probiotic tablet treatment (control group).



← **Moderate
chronic
periodontitis**

The clinical examination : PI.I, GI, SBI, PPD, CAL.

Clinical characteristics of study patients

Periodontal status	STUDY GROUP	
	Moderate chronic periodontitis Group 1 (n=24)	Control group Group 2 (n=14)
Plaque index (PI.I)	2,26 ± 0,14	1,58 ± 0,82
Gingival index (GI)	1,75 ± 0,27	1,07 ± 0,64
Clinical Attachment Level (CAL)	3,5 ± 0,36	0,61 ± 0,44
DMFT index	13,62 ± 2,66	10,47 ± 3,45
D (decay)	2,87 ± 2,35	3,11 ± 1,78

Estimation of cytokines in gingival crevicular fluid



TNF-alpha – HS ELISA technique (R&D Systems);

MDD = 0.106 pg/ml

IL-1beta – HS ELISA technique (R&D Systems);

MDD = 0.057 pg/ml

IL-17 – Platinum ELISA technique (eBioscience);

MDD = 0.5 pg/ml

Results

Values of clinical indices (mean±SD) in patients with moderate chronic periodontitis in 1st term of study

Clinical indices	1st term of study	
	Group 1 n=24	Group 2 n=14
PI.I	1.61 ± 0.31	1.64 ± 0.29
GI	1.33 ± 0.29	1.36 ± 0.31
SBI	1.69 ± 0.35	1.73 ± 0.32
PPD	3.35 ± 0.32	3.39 ± 0.36
CAL	3.47 ± 0.38	3.49 ± 0.35

Results

Values of clinical indices (mean±SD) in patients with moderate chronic periodontitis in 2nd term of study

Clinical indices	2nd term of study		
	Group 1 n=24		Group 2 n=14
	Subgroup 1A n = 18	Subgroup 1B n = 6	
PI.I	1.65 ± 0.26	1.76 ± 0.38	1.72 ± 0.34
GI	1.21 ± 0.36	1.29 ± 0.24	1.31 ± 0.27
SBI	1.24 ± 0.31*	1.67 ± 0.36	1.75 ± 0.31
PPD	3.06 ± 0.35*	3.26 ± 0.45	3.34 ± 0.38
CAL	3.16 ± 0.27*	3.53 ± 0.34	3.56 ± 0.41

* the difference between the 1st and the 2nd term is statistically significant in a given group of patients

Levels of TNF- α , IL-1 β and IL-17 (pg/ml) in gingival crevicular fluid of patients in 1st term of study

Clinical indices	1st term of study	
	Group 1 n = 24	Group 2 n = 14
TNF- α (pg/ml)	5.52 \pm 0.94	5.42 \pm 0.87
IL-1 β (pg/ml)	20.74 \pm 2.71	20.16 \pm 2.46
IL-17 (pg/ml)	17.58 \pm 3.23	17.23 \pm 3.15

Levels of TNF- α , IL-1 β and IL-17 (pg/ml) in gingival crevicular fluid of patients in 2nd term of study

Clinical indices	2nd term of study		
	Group 1 n=24		Group 2 n=14
	Subgroup 1A n = 18	Subgroup 1B n = 6	
TNF- α (pg/ml)	2.34 \pm 0.87*	5.49 \pm 0.84	5.27 \pm 0.94
IL-1 β (pg/ml)	6.83 \pm 1.51*	19.86 \pm 1.98	19.63 \pm 2.21
IL-17 (pg/ml)	9.35 \pm 1.71*	16.62 \pm 2.29	15.93 \pm 2.37

* the difference between the 1st and the 2nd term is statistically significant in a given group of patients



Conclusions

The obtained results indicate that *Lactobacillus reuteri* exerts an immunomodulatory effect in patients with chronic periodontitis, reducing the pro-inflammatory cytokine response, which may result in an improvement of clinical periodontal parameters.