

Probiotics in oral health and disease: a systematic review

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Table S9- Characteristics of clinical trials of probiotics in halitosis

Reference Oral condition	Parameters evaluated - Evaluation time	Study design - Groups of study	Sample size (at the end of the study)- Age or age group	Vehicle - Administration time	Probiotic strain(s) used (Dose)
Lee et al., 2020 Halitosis	Organoleptic test, VSC, bad breath improvement score, oral colonization of <i>W.cibaria</i> , vital signs, hematology and blood chemistry - baseline, 4,8 weeks	RCT double-blind, placebo controlled /1 st step: SRP - Probiotic group and Placebo group	68 healthy adults with halitosis- 20-39 years	Tablet (800g)– 8 weeks (once a day)	<i>Weissella cibaria</i> (10 ⁸ CFU/g + isomalt, sucralose, mint flavor, maltodextrin and magnesium stearate)
Benic et al., 2019 Halitosis in ortodontics patients	Clinical: PI, GI, VSC/ Microbiological: <i>Streptococcus</i> , <i>Rothia</i> , <i>Selenomonas</i> , <i>Actinomyces</i> and <i>Lautropia</i> - baseline,1, 3 months	RCT placebo controlled, triple-blind, prospective - Probiotic group and Placebo group (+ 20 mg isomalt)	64 orthodontic patients - 10-30 years	Lozenges- 1 month (twice a day)	<i>Streptococcus salivarius M18</i> (3.6 x 10 ⁹ CFU)
Suzuki et al., 2014 Halitosis and oral health	Clinical: organoleptic scores OLT, VCS, PD, PI, coating lingual, salivary flow/ Microbiological - baseline, 14 days	RCT cross-over, placebo-controlled, double-blind Intervention 14 days/washout 2 weeks/intervention 14 days- Probiotic group (with 280 mg xylitol/tablet) / Placebo group (xylitol 280 mg/tablet)	23 adults with halitosis - 22-67 years	Tablet - 14 days (three times a day)	<i>Lactobacillus salivarius</i> WB21 (6.7 x 10 ⁸ colonies)
Keller et al., 2012 Halitosis	Clinical: organoleptic scores, VCS (Halimeter) - baseline, 14 days	RCT cross-over, placebo-controlled, double-blind Intervention 2 weeks/ washout 3 weeks/ intervention 2 weeks - Probiotic group / Placebo group (lozenge containing, isomalt, hydrogenated palm oil, sucrose esters of fatty acids, mint oil, menthol flavor sucralose)	25 adults with subjective feeling of bad breath - 19-25 years	Lozenge - 2 weeks (twice a day)	<i>Lactobacillus reuteri</i> DSM 17938 and ATCC PTA 5289 (10 ⁸ CFU)