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Colonization and persistence of *S. salivarius* 24 SMBc in human rhinopharynx

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Bacteriotherapy" has the potential to naturally cure, focus on the prevention and/or treat infections, this is done by beneficial bacteria that re-establish or enhance the biodiversity of a microflora and interfere with potential pathogens by bacteriocin production. The oral cavity is colonized with pathogenic and non-pathogenic species including *S. salivarius*, which is considered the predominant 'safe' species due to its virtuous nature representing a good candidate for oral probiotics in humans. In our laboratory, we characterized one strain of *S. salivarius* 24 SMB, isolated from healthy children, as a potential oral probiotic for its characteristics: i) safety for the host, ii) potent capacity of adhesion to HEp-2 cells and iii) excellent inhibitory activity against *S. pneumoniae* and S. pyogenes. The clinical trial protocol of a nasal spray formulation of *S. salivarius* 24 SMB was conducted on healthy volunteers to evaluate the safety and the ability to colonize and persist in the upper respiratory tract. The study enrolled 17 patients: the formulation was given for 3 days after azithromycin treatment and the presence of *S. salivarius* 24 SMB was determined after 2/4/ 24 h, and 7 days from nasal spray administration plating nasal swabs for each time onto MSA. Obtained results demonstrated: i) the absence of adverse effects for all subjects enrolled, and ii) the capability of S. salivarius 24 SMB to persist in rhinopharynx tissue in 50% of subjects after 6 days from the last dose of the formulation (105 CFU/mL). The presence of our stain was determined by molecular identification, antagonism tests to evaluate BLIS production and RAPD-PCR to distinguish S. salivarius 24 SMB's genotype from other S. salivarius strains. The nasal spray was well tolerated in all patients. All these characteristics make this strain suitable for use in bacteriotherapy. This strain is currently under clinical evaluation in a randomized double blind trial for the prevention and/or treatment of chronic otitis media in pediatric age patients.

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