

THE RELATIONSHIP BETWEEN THE ORAL MICROBIOTA AND METABOLIC SYNDROME

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Laboratory
Medicine



INTRODUCTION

The oral microbiota plays a crucial role in both systemic inflammation and Metabolic syndrome (MetS), which is characterised by low-grade inflammation. Studies have analysed the gut microbiota using stool specimens from MET-S subjects with Mets; however, the etiological role of the oral microbiota in the development of Mets is still uncertain.

OBJECTIVE

We investigated the oral microbiota of 128 subgingival plaque samples from a South African cohort with and without Mets.

METHODOLOGY



RESULTS

Table 1: Characteristics

	MetS: No (n=66)	MetS: Yes (n=62)	P-Value
Age (years)	44.24 (14.55)	49.98 (10.45)	0.012
Males	23 (35%)	12 (19%)	0.049
Gingival bleeding			0.964
No (n=44)	23 (35%)	21 (35%)	
Yes (n=81)	42 (65%)	39 (65%)	
Periodontitis			0.499
No (n=56)	31 (48%)	25 (42%)	
Yes (n=69)	34 (52%)	35 (58%)	

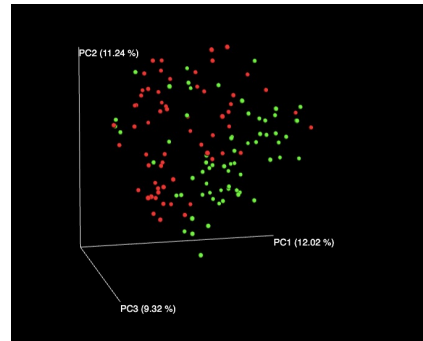


Figure 1. Beta diversity comparisons of microbial communities in subjects with MetS and subjects without MetS. MetS positive (red) and MetS negative (green) are shown to determine Bray-Curtis distances.

After a comprehensive analysis of the oral microbiome, we observed a significant increase in gram-positive aerobic and anaerobic microbiota in those with MetS.

Table 2. Odd ratio genus species vs MetS

	Model 1		Model 2		Model 3	
	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value
<i>Campylobacter gracilis</i>	0.52 (0.32; 0.85)	0.008	0.30 (0.15; 0.60)	0.001	0.29 (0.12; 0.68)	0.005
<i>Corynebacterium matruchotii</i>	1.46 (1.18; 1.80)	0.001	1.30 (1.01; 1.67)	0.042	1.24 (0.94; 1.63)	0.131
<i>Prevotella oulorum</i>	0.39 (0.13; 1.12)	0.081	0.12 (0.03; 0.54)	0.006	0.15 (0.03; 0.76)	0.023
<i>Selenomonas noxia</i>	0.74 (0.31; 1.78)	0.508	0.20 (0.06; 0.70)	0.012	0.24 (0.06; 0.93)	0.039
<i>Veillonella rogosae</i>	0.12 (0.03; 0.53)	0.005	0.12 (0.02; 0.88)	0.037	0.16 (0.01; 1.78)	0.137

Model 1: crude; Model 2: age, sex, and BMI; Model 3: age, sex, BMI, HbA1c, insulin fasting, CRP, and periodontitis

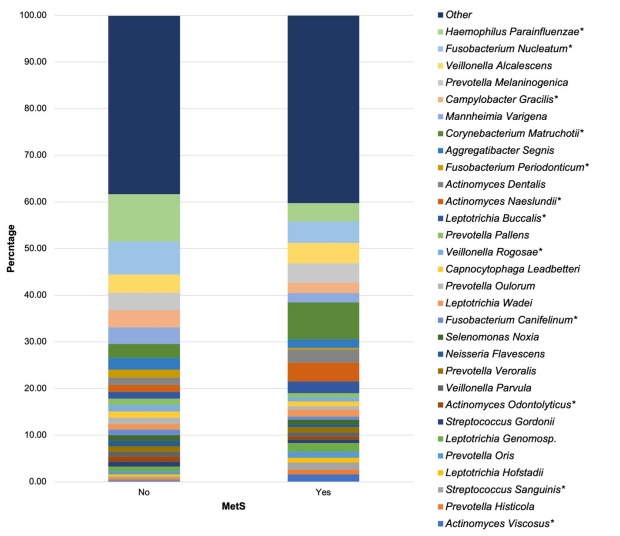


Figure 2: Abundance of genus species versus MetS (*significant <math>< 0.05</math>)

Conclusion

In conclusion, this study has shown that the oral microbiota is disrupted in Mets and may promote inflammation providing a gateway to other systemic diseases, including diabetes and cardiovascular diseases.

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