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### Role of exercise-induced mitochondrial remodeling on insulin resistant

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Impaired mitochondrial function was relative to Insulin Resistance (IR) and the chronic exercise training can improve insulin sensitivity, but the underlying mechanisms are obscure. Here we report the unbalanced mitochondrial dynamics in fusion and fission in high-fat-diet induced muscular IR and its mediation through chronic exercise training. We used high-fat-diet to create IR mice models and followed the intervention of exercise training. We found that the expression of mitochondrial fusion proteins decreased and fission proteins increased. The number and size of mitochondria decreased, too. The skeletal muscle mitochondria of IR mice showed decreased biogenesis, inclined to fission and dysfunction. Take together with the fact we found that the glucose uptake and mitochondrial respiratory function declined in cultured muscle cells which incubated with Drp1 inhibitor. It suggested that the disturbed balance between fusion and fission of skeletal muscle mitochondrial may involve in the pathogenesis of IR. The skeletal muscle mitochondria in IR mice committed aerobic training showed enhanced respiratory function and ATP synthesis activity. Both of the mitochondrial fusion and fission protein expression increased. The data demonstrated that the chronic aerobic exercise could enhanced muscular insulin sensibility and reversed high-fat-diet induced IR through increasing mitochondrial oxidative phosphorylation. The chronic exercise-induced remodeled balance of mitochondrial dynamics in fusion and fission may contribute to the mechanism against insulin resistance.

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### The prevalence of oral *Candida* infections in periodontitis patients with Type 2 Diabetes Mellitus

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**Objectives:** The aim of this study was to determine the prevalence of *Candida* spp. in periodontitis patients with Type 2 Diabetes Mellitus.

**Methods:** This cross-sectional study included 42 diabetic patients with periodontitis (aged 21—70 years; 18 males and 24 females). Clinical measurements included probing pocket depth (PPD), clinical attachment level (CAL) and hemoglobin A1c (HbA1c) levels. Sub-gingival samples were collected from the mesio-buccal aspect of 3 teeth for fungal analysis. *Candida* species, including *Candida albicans*, *Candida dubliniensis*, *Candida tropicalis* and *Candida glabrata*, were identified using Gram staining, the germ tube test, CHROMagar, Staib agar and API 20C AUX.

**Results:** The overall prevalence of *Candida* in diabetic patients with periodontitis observed in our study was 52%. The most common spp. of *Candida* identified were *C. albicans* (38%), followed by *C. dubliniensis* (9.5%), *C. tropicalis* (4.7%) and *C. glabrata* (4.7%). Compared to females, male patients were characterized by increased levels of *Candida* infections. Our results also indicate that individuals over the age of 40 had increased levels of *Candida* infections compared to patients younger than 40. *Candida* infections were higher among subjects with elevated blood sugar levels (HbA1c > 9) compared to individuals with well-controlled blood sugar levels (HbA1c < 6). Patients with PPDs ≥ 5 had an increased risk of *Candida* infection compared to patients with PPDs between 3 and 4.

**Conclusion:** This study indicates that the frequency of *C. albicans* is higher than the frequencies of *C. dubliniensis*, *C. tropicalis* and *C. glabrata* in diabetic patients with periodontitis. *Candida* infections were observed at increased frequencies among subjects with high blood sugar levels and PPDs ≥ 5.

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