  
(crew\_env) C:\Users\USER\Downloads\Test\_Agent\Test\_5>python run\_redel.py

✅ AutoAgentSystem 啟動！直接輸入你的總任務，Ctrl+C / exit 可退出。

USER: 請用 PubMed 搜尋 "diabetes AI" 並摘要結果

AI:

[🛠️ Tool Call]: [ToolCall(id='call\_TTGofbdelQhRalq3qkeSgUyL', type='function', function=FunctionCall(name='search\_pubmed', arguments='{"query":"diabetes AI"}'))]

AI:1. J Physiol. 2025 May 25. doi: 10.1113/JP288368. Online ahead of print.

The skeletal muscle response to high-intensity training assessed by

single-nucleus RNA-sequencing is blunted in individuals with type 2 diabetes.

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Training can improve insulin sensitivity in individuals with type 2 diabetes,

but a clear understanding of the mechanisms remains elusive. To further our

knowledge in this area, we aimed to examine the effect of type 2 diabetes and of

high-intensity interval training (HIIT) on the nuclear transcriptional response

in skeletal muscle. We performed single-nucleus RNA-sequencing (snRNA-seq) and

immunofluorescence analysis on muscle biopsies from the trained and the

untrained legs of participants with and without type 2 diabetes, after 2 weeks

of one-legged HIIT on a cycle ergometer. Surprisingly, the type 2 diabetes

condition only seemed to have a minor effect on transcriptional activity in

myonuclei related to major metabolic pathways when comparing the untrained legs.

However, while in particular the type IIA myonuclei in the control group

displayed a considerable metabolic response to HIIT, with increases in genes

related to glycogen breakdown and glycolysis primarily in the type IIA myonuclei

of the trained leg, this response was blunted in the diabetes group, despite a

marked increase in glucose clearance in both groups. Additionally, we observed

that fibre type distribution assessed by immunofluorescence significantly

correlated with the proportion of myonuclei in the snRNA-seq analysis. In

conclusion, the type 2 diabetes condition blunts the metabolic transcriptional

response to HIIT in the type IIA myonuclei without affecting the improvement in

insulin sensitivity. Additionally, our results indicate that snRNA-seq can be

used as a surrogate marker for fibre type distribution in sedentary middle-aged

adults. KEY POINTS: The study utilized single-nucleus RNA sequencing (snRNA-seq)

to analyse 38 skeletal muscle biopsies, revealing distinct transcriptional

profiles in myonuclei from individuals with and without type 2 diabetes (T2D)

after 2 weeks of HIIT. snRNA-seq identified significant differences in gene

expression, with 14 differentially expressed genes (DEGs) in type IIA myonuclei

of the control group, specifically related to glycogen breakdown and glycolysis,

which were blunted in the T2D group. In the control group, HIIT induced a

substantial transcriptional response in type IIA myonuclei, enhancing metabolic

pathways associated with insulin sensitivity, while the T2D group showed minimal

transcriptional changes despite improved insulin sensitivity. The T2D group

exhibited a blunted response in metabolic gene expression, indicating that the

training effect on muscle adaptation was significantly impaired compared to

healthy controls. Overall, the findings highlight the differential impact of

HIIT on muscle metabolism, emphasizing the need for tailored exercise

interventions for individuals with T2D.

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1. Curr Microbiol. 2025 May 24;82(7):305. doi: 10.1007/s00284-025-04283-1.

Naringenin as a Potent Natural Biofilm Inhibitor of Pseudomonas aeruginosa in

Diabetic Foot Ulcers Through lasR Competitive Inhibition.

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Chronic non-healing foot ulcers are a major complication in diabetic patients,

contributing to significant morbidity and mortality. Microorganisms in these

wounds form biofilms, conferring greater virulence and enhanced protection from

antibiotics. Hence, we examined naringenin, and other natural compounds like

chlorofuranone, 4-nitropyridine N-oxide, and quercetin as a positive control

against the major pathogenic organism that forms biofilm in foot ulcers. Here,

we focused on Pseudomonas aeruginosa, which produces high levels of biofilm in

diabetic foot ulcers. Naringenin (47.10 µg/ml for PA21; 124.7 µg/ml for PA333)

and other natural compounds were tested for their ability to inhibit biofilm

formation and virulence in vitro, and their effect on biofilm-associated gene

expression was studied. The biofilm inhibitory mechanism of naringenin was

elucidated using in silico analysis and in vitro reporter gene assay. In vitro

biofilm assays, confocal and scanning electron microscopy showed that natural

compounds effectively inhibited biofilm, without causing cell death. Treatment

with these compounds significantly altered the expression of genes associated

with quorum sensing in P. aeruginosa, such as lasR, pslA, algA, gacS, and pelA.

Naringenin decreased the production of major virulence factors in P. aeruginosa.

Molecular docking showed that naringenin exhibited the strongest binding

affinity to LasR, and the same was validated by reporter gene assay using

plasmid pSB1142 indicating its role as a competitive inhibitor in the las quorum

sensing system in P. aeruginosa. The findings of this study could be

extrapolated to in vivo diabetic wound infection models to help optimize the use

of naringenin in effective biofilm control for better wound management in

diabetic patients.

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Conflict of interest statement: Declarations. Conflict of interest: The authors

declare that there are no conflicts of interest. Ethical Approval: The current

study was conducted in accordance with the guidelines and approval of the

Institutional Ethics Committee, MAHE, Manipal, India. Study number: IEC

124/2017. Consent to Participate: Informed consent was obtained from all

participants included in the study.

1. Cardiovasc Interv Ther. 2025 May 24. doi: 10.1007/s12928-025-01143-4. Online

ahead of print.

Comparable clinical characteristics and outcomes of patients undergoing

endovascular treatment for aorto-iliac or femoropopliteal lesions.

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Lower extremity peripheral arterial disease is usually a consequence of advanced

atherosclerosis, leading to high mortality and morbidity. Although clinical

characteristics and outcomes may differ among patients having peripheral disease

in different arterial territories, contemporary data are scarce. From January

2019 to December 2022, this multicenter registry study included 712 patients

undergoing endovascular treatment (EVT) for either aorto-iliac (AI) or

femoropopliteal (FP) lesions. Patient characteristics and outcomes were compared

between AI-EVT and FP-EVT groups. Clinical endpoints included major adverse

cardiovascular events, major adverse limb events (MALE), and all-cause

mortality, stratified by chronic limb-threatening ischemia (CLTI). Of the 712

patients, 217 (30.5%) and 495 (69.5%) underwent AI-EVT or FP-EVT. Patients

undergoing AI-EVT were more likely to be men and current smokers, while diabetes

was more frequent in the FP-EVT group. The prevalence of CLTI was significantly

higher in the FP-EVT group. In the entire study population, the FP-EVT rather

than the AI-EVT group had a significantly higher rate of MALE and mortality, but

the incidence of major adverse cardiovascular events was similar between the two

groups. When focusing only on patients without CLTI, the mortality risk was

similar, while the MALE risk was still higher in the FP-EVT group. In

conclusion, patients undergoing EVT for AI and FP lesions in contemporary

settings were differently characterized by baseline factors. Although the worse

clinical outcomes in the FP-EVT group were mainly driven by the higher

prevalence of CLTI, the MALE risk was still increased in patients without CLTI.

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Conflict of interest statement: Declarations. Conflict of interest: The authors

declare that they have no conflict of interest.

AI:Here are summaries of recent biomedical papers related to "diabetes AI" from PubMed:

1. \*\*The skeletal muscle response to high-intensity training in individuals with type 2 diabetes\*\*:

- This study examined how high-intensity interval training (HIIT) affects the transcriptional response in skeletal muscle of individuals with type 2 diabetes. Using single-nucleus RNA-sequencing, the researchers found that while HIIT improved insulin sensitivity in both diabetic and non-diabetic participants, the metabolic transcriptional response in type IIA myonuclei was blunted in diabetic individuals. This suggests the need for tailored exercise interventions for those with type 2 diabetes.

2. \*\*Naringenin as a biofilm inhibitor in diabetic foot ulcers\*\*:

- This research investigated the effectiveness of naringenin, a natural compound, in inhibiting biofilm formation by Pseudomonas aeruginosa in diabetic foot ulcers. The study demonstrated that naringenin effectively reduced biofilm formation and altered gene expression related to virulence factors. This suggests potential for naringenin in managing diabetic wound infections by controlling biofilm formation.

3. \*\*Clinical outcomes of endovascular treatment in diabetic patients with peripheral arterial disease\*\*:

- The study explored the outcomes of endovascular treatment (EVT) for aorto-iliac (AI) or femoropopliteal (FP) lesions in patients, including those with diabetes. It found that patients with FP lesions, who were more often diabetic, had higher rates of major adverse limb events and mortality compared to those with AI lesions. The findings highlight the need for specific treatment strategies in diabetic patients with different types of peripheral arterial disease.

These summaries highlight the intersection of diabetes research with AI methodologies and advanced therapeutic strategies, emphasizing the importance of personalized approaches in managing diabetes-related conditions.

USER: