中国工程科技知识中心
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# 《慢病防控和健康管理战略研究》参考

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## [资讯]

### 1. Diabetes Support Intervention May Reduce Depression Risk

【**Diabetes Self-management**】A diabetes support intervention involving text messaging was found to be helpful for blood glucose control in people with symptoms of depression, and even helped reduce those symptoms over time, according to a new study published in the Journal of Diabetes and its Complications.

链接：https://www.diabetesselfmanagement.com/news-research/2021/10/25/diabetes-support-intervention-may-reduce-depression-risk/

## [文献速递]

### 2. Dapagliflozin Suppresses ER Stress and Improves Subclinical Myocardial Function in Diabetes

文献来源：*Diabetes: A Journal of the American Diabetes Association*

作者：*Jhih-Yuan Shih*

摘要：Dapagliflozin (DAPA), a sodium–glucose cotransporter 2 inhibitor, is approved for treatments of patients with diabetes. The DAPA-HF (Dapagliflozin and Prevention of Adverse Outcomes in Heart Failure) trial disclosed DAPA's benefits in symptomatic heart failure, but the underlying mechanism remains largely unknown. In this longitudinal and

prospective study, we investigated changes of left ventricular functions including speckle tracking in patients with diabetes who were free from symptomatic heart failure post–DAPA treatment. Using a rat model with streptozotocin-induced diabetes, we measured the effects of DAPA on myocardial function. In patients with diabetes, following 6 months of DAPA treatment, despite no significant changes in left ventricular ejection fraction, the diastolic function and longitudinal strain improved. Likewise, compared with control, the diabetic rat heart developed pronounced fibrosis and a decline in strain and overall hemodynamics, all of which were mitigated by DAPA treatment. In contrast, despite insulin exerting a glucose-lowering effect, it failed to improve myocardial function and fibrosis. In our in vitro study, under high glucose cardiomyocytes showed significant activations of apoptosis, reactive oxygen species, and endoplasmic reticulum (ER) stress–associated proteins, which were attenuated by the coincubation of DAPA. Mechanistically, DAPA suppressed ER stress, reduced myocardial fibrosis, and improved overall function. The results can lead to further improvement in management of left ventricular function in patients with diabetes.

链接：http://pan.ckcest.cn/rcservice//doc?doc_id=86930

3. **Hyperoside from Z. bungeanum leaves restores insulin secretion and mitochondrial function by regulating pancreatic cellular redox status in diabetic mice**

文献来源：*Free Radical Biology and Medicine*

作者：*Zhang, Yali*

摘要：Type 2 diabetes mellitus (T2DM) is characterized by peripheral insulin resistance and insufficient insulin secretion caused by pancreatic beta-cell dysfunction. Excessive production of reactive oxygen species (ROS) and activation of caspases in mitochondria inhibit insulin secretion and promote apoptosis of pancreatic beta-cells. Studies have demonstrated that positive correlation between the consumption of flavonoid-rich diets and diabetes prevention. Zanthoxylum bungeanum leaves have been used as food for a long time and are rich in flavonoids with strong radical scavenging abilities. We and others have identified hyperoside as the major bioactive component of total flavonoids exacted

from Zanthoxylum bungeanum leaves. We hypothesize that hyperoside from Z. bungeanum leaves (HZL) may prevent T2DM by inhibiting excessive ROS formation and reducing pancreatic beta-cells apoptosis. In current study, HZL was administered to high fat diet and alloxan-induced diabetic mice, and appeared to significantly ameliorate the damage of glucose metabolism and insulin secretion as well as restore the structural integrity of pancreas, and inhibit beta-cell apoptosis. Pancreatic antioxidant enzyme activities were also restored by HZL supplementation. In cultured MIN6 cells, which produce and secret insulin, HZL treatment restored insulin secretion through inhibiting the expression of TXNIP and lowering intracellular calcium concentration. These observations mechanistically linked the beneficial effects of HZL with the regulation on cellular redox status and mitochondrial function. Taken together, our findings suggest that HZL has protective effect on pancreatic beta-cell function and may be a beneficial nutritional supplementation for prevention and adjuvant therapy of T2DM.

链接：http://pan.ckcest.cn/rcservice//doc?doc_id=86933

**4. Testosterone therapy for prevention and reversal of type 2 diabetes in men with low testosterone**

文献来源：*Current opinion in pharmacology*

作者：*Caliber, Monica*

摘要：Men with obesity and/or type 2 diabetes (T2D) have a high prevalence of testosterone deficiency (TD). Similarly, men with TD have an increased risk of developing obesity and/or T2D, and further body fat accumulation and deterioration of glycemic control create a vicious cycle. The landmark testosterone for diabetes mellitus trial, the largest randomized controlled trial of testosterone therapy (TTh) to date, confirms the beneficial effects of TTh on fat loss and gain in muscle mass, and that TTh for 2 years significantly reduces the risk of incident T2D, and may also reverse T2D. The testosterone for diabetes mellitus trial suggests that TTh reduces the risk of T2D and results in greater improvement in sexual function and wellbeing, beyond lifestyle intervention alone.

链接： http://pan.ckcest.cn/rcservice//doc?doc_id=86934

## 5. Diabetes in pregnancy 100 years after the discovery of insulin

文献来源：*Metabolism: Clinical and Experimental*

作者：*Retnakaran, Ravi*

摘要：By making it possible for women with diabetes to achieve their family planning goals, the discovery of insulin ushered in the field of diabetes in pregnancy. The ensuing century has witnessed tremendous advances, with clinical focus on preconception planning and maternal glycemic control making successful pregnancy an achievable goal. Currently, the global epidemic of overweight/obesity has led to maternal hyperglycemia now affecting one in every six pregnancies worldwide, prompting intense research interest. Topics of particular interest include (i) the optimal approach to diagnosing gestational diabetes mellitus (GDM); (ii) the emergence of GDM as a chronic metabolic disorder identifying future risk of non-communicable disease; (iii) the transgenerational impact of maternal glycemia as per the Developmental Origins of Health and Disease; and (iv) the application of new technology for optimizing clinical management. These topics have raised exciting questions such as (i) whether the treatment of diabetes in pregnancy can impact growth/development in childhood, (ii) whether GDM can be prevented, and (iii) whether the diagnosis of GDM could facilitate the prevention of type 2 diabetes and cardiovascular disease. Indeed, this field may be on the precipice of a golden era of new concepts and evidence to optimize the health of mother and child.

链接：http://pan.ckcest.cn/rcservice//doc?doc_id=86931

## 6. Resveratrol mitigates pancreatic TF activation and autophagy-mediated beta cell death via inhibition of CXCL16/ox-LDL pathway

文献来源：*European Journal of Pharmacology: An International Journal*

作者：*Darwish, Mostafa A.*

摘要：The role of CXC chemokine ligand 16 (CXCL16), oxidized LDL (ox-LDL), tissue factor (TF) and autophagyinduced beta cell death in type 1 diabetes mellitus (T1DM) pathogenesis is still unclear. We examined the therapeutic potential and mechanism of resveratrol (RES) against T1DM. Diabetes was induced in Balb/c mice by i. p. injection

of 55 mg/kg streptozotocin (STZ) for five consecutive days. The control group received vehicles. RES or (RES + STZ) groups received RES (50 mg/kg, i. p.) daily for 12 days starting from the fourth day of buffer or STZ injections, respectively. Blood glucose, serum insulin, beta cell mass, serum lipid profiles, histological changes, oxidative stress biomarkers were determined. Moreover, CXCL16, TF, ox-LDL, P62 and LC3 tissue expression were also analyzed. Diabetic mice showed a marked deterioration in biochemical, physical and oxidative stress parameters. Interestingly, immunofluorescence analysis showed a remarkable elevation in CXCL16 (12 folds), ox-LDL (9 folds), TF (8.3 folds) in pancreatic B-cells. Moreover, western blotting revealed a profound increase in ox-LDL (2.6 folds), TF (3.2 folds), while a significant decline in P62 (0.34) and LC3 (0.25) when compared to control. RES mitigated biochemical, physical, oxidative imbalance and distorted pancreatic architecture in T1DM mice. Intriguingly, CXCL16, ox-LDL, TF and autophagic markers were also restored after RES treatment. Our data give the first direct evidence that beta cell-specific CXCL16/ox-LDL pathway activation is a potential trigger of TF activation and autophagic beta cell death in T1DM. Moreover, RES may have potential therapeutic applications for prevention of T1DM mainly via ameliorating this pathway.

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**7. The effect of PCSK9 inhibitors on brain stroke prevention: A systematic review and meta-analysis**

文献来源：*Nutrition, metabolism, and cardiovascular diseases: NMCD*

作者：*Qin, Jin*

摘要：Background and aims: Although proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors have been shown to improve cardiovascular outcomes, their effects on brain stroke risk are unclear. The present meta-analysis aimed to evaluate the effects of PCSK9 inhibitors on brain stroke prevention. Methods and results: We searched PubMed, Embase, Cochrane Library, Web of Science, and ClinicalTrials.gov for research published until December 30, 2020, to find randomized controlled trials (RCTs) of PCSK9 inhibitors for brain stroke prevention. Relative risk (RR) and 95% confidence intervals (CIs) were

used to represent the outcomes. Seven RCTs with 57,440 participants, including 29,850 patients treated with PCSK9 inhibitors and 27,590 control participants, were included. PCSK9 inhibitors were associated with significant reductions in total brain stroke risk (RR, 0.77; 95% CI, 0.67-0.88; P < 0.001) and ischemic brain stroke risk (RR, 0.76; 95% CI, 0.66, 0.89; P < 0.001) in comparison with the control group. There was no significant difference in cardiovascular mortality (RR, 0.95; 95% CI, 0.84-1.07; P = 0.382) and the risk of hemorrhagic brain stroke (RR, 1.00; 95% CI, 0.66-1.51; P = 0.999) between patients treated with PCSK9 inhibitors and controls. PCSK9 inhibitors did not significantly increase the incidence of neurocognitive adverse events (RR, 1.02; 95% CI, 0.81-1.29; P = 0.85). Moreover, subgroup analysis showed no difference in cognitive function disorder risks among different PCSK9 inhibitors and treatment times. Conclusions: PCSK9 inhibitors significantly reduced the risk of total brain stroke and ischemic brain stroke without increasing the risk of brain hemorrhage and neurocognitive impairment. (c) 2021 The Author(s). Published by Elsevier B.V. on behalf of The Italian Diabetes Society, the Italian Society for the Study of Atherosclerosis, the Italian Society of Human Nutrition and the Department of Clinical Medicine and Surgery, Federico II University.

链接：http://pan.ckcest.cn/rcservice//doc?doc_id=86935

**8. Cardiologist's approach to the diabetic patient: No further delay for a paradigm shift**

文献来源：*International Journal of Cardiology*

作者：*Maranta, Francesco*

摘要：Type 2 diabetes mellitus (DM) is constantly increasing worldwide and its most critical determinant of mor-bidity and mortality is still represented by cardiovascular (CV) complications. For years, cardiologists' ap-proach to diabetic patients has been focused on risk factors optimization, with positive results. However, the management of DM per se was never truly considered in order to obtain prevention from major CV events, because medications used for glycemic control were not expected to gain CV benefit. Early trials concerning intensive versus conventional glycemia control did not prove useful in reducing the number of CV events. The introduction of new molecules led to a game

change in DM treatment, as some new glucose-lowering drugs (GLDs), such as sodium-glucose linked transporter-2 inhibitors (SGLT-2i) and glucagon-like peptide 1 receptor agonists (GLP-1 RA), showed not only to be safe but also to ensure CV benefit. A combination of anti-atherogenic effects and hemodynamic improvements are likely explanations of the observed reduction of CV events and mortality. These evidence opened a completely new era in the field of GLDs and of DM treatment. Nonetheless, the presence of residual cardiovascular risk despite optimal medical therapy remains an issue and an aggressive strategy against multiple risk factors is suggested. A paradigm shift toward a new approach to DM management should be made with no further delay with the use of medications that may prevent CV events in an integrated strategy of CV risk reduction.

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**9. Changes of Serum Sex Hormone-Binding Globulin, Homocysteine, and Hypersensitive CRP Levels during Pregnancy and Their Relationship with Gestational Diabetes Mellitus**

文献来源：*Gynecologic and obstetric investigation*

作者：*Liu, Wenhua*

摘要：Background: Inflammatory response state is related to the pathogenesis of gestational diabetes mellitus (GDM). Objective: To investigate the changes of serum sex hormone-binding globulin (SHBG), homocysteine (Hcy), and hypersensitive CRP (hs-CRP) levels during pregnancy and their relationship with GDM. Methods: The nested case-control study method was used. Sixty nonobese single pregnant women diagnosed with GDM were divided into the GDM group (GDM, n = 60), together with another 60 pregnant women with normal glucose tolerance who were matched in the same period and divided into the control group (control, n = 60). The serum Hcy, hs-CRP, and SHBG levels were measured. Results: The serum levels of Hcy and hs-CRP were significantly higher in the GDM group compared with the control group, and serum levels of SHBG was significantly lower in the GDM group compared with the control group at different stages of pregnancy. The serum levels of Hcy and hs-CRP in pregnant women increased with the increase of gestational age, and serum levels of SHBG decreased with the increase of

gestational age. Increased Hcy and hs-CRP levels in the second trimester and decreased SHBG levels in the first trimester were related to GDM. The odds ratio (OR) and 95% confidence interval (CI) were as follows: OR: 4.5, 95% CI: 1.5-13.0; OR: 4.2, 95% CI: 1.5-10.1; and OR: 0.4, 95% CI: 0.3-0.7, respectively. Conclusion: Increased Hcy and hs-CRP in the second trimester and decreased SHBG in the first trimester were independent predictors of GDM, which provides a new idea for early prevention and treatment of GDM.

链接：http://pan.ckcest.cn/rcservice//doc?doc_id=86928

**10. Leisure Sedentary Behavior Levels and Meeting Program Goals in a Community Lifestyle Intervention for Diabetes Prevention**

文献来源：*Journal of physical activity & health*

作者：*Rockette-Wagner, Bonny*

摘要：Background: The importance of leisure sedentary behavior (LSB) change in diabetes prevention efforts is not well known. This study examines the relationships between changes in self-reported LSB and the primary intervention goals (weight and moderate-intensity to vigorous-intensity physical activity [MVPA]) during a community-based translation of the Diabetes Prevention Program (the Group Lifestyle Balance Program). Methods: A total of 322 adults at risk for type 2 diabetes were recruited from 3 community centers, a worksite, and military site. Community and worksite participants were randomized to immediate or delayed-delivery (control) intervention. All military site participants (n = 99) received immediate intervention. Logistic and linear generalized estimating equations were used to determine associations between LSB changes and weight-related outcomes and MVPA. Results: Results were obtained for 259 (80.4%) participants. The LSB decreased after 6 and 12 months (mean [95% confidence interval]: -25.7 [-38.6 to -12.8] and -16.1 [-28.2 to -3.9] min/d; both P<.05). Each 20-minute reduction in LSB was associated with a 5% increase in odds of meeting the weight-loss goal (6 mo: odds ratio = 1.05 [1.002 to 1.102]; P=.042; adjusted model including MVPA), but LSB was not related to changes in reported MVPA minutes or MVPA goal achievement. Conclusion: Within the context of existing lifestyle intervention programs, reducing sedentary behavior has the potential to contribute to weight loss separately from reported

MVPA improvement.

链接：http://pan.ckcest.cn/rcservice//doc?doc_id=86932

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