Clin Endocrinol Metab,2005,90(7): 4145-4150.
[11] Succurro E, Marini MA, Frontoni S, et al. Insulin secretion in metabolically obese, but normal weight, and in metabolically healthy but obese individuals. Obesity (Silver Spring),2008,16(8): 1881-1886.
[12] 范晶,周波,李启富,等. 肥胖特殊亚型分布及影响因素的横断面社区调查. 上海医学,2011,34(5): 345-350.
[13] Kuk JL, Ardern CI. Are metabolically normal but obese individuals at lower risk for all-cause mortality? Diabetes Care, 2009, 32(12): 2297-2299.
[14] Ruderman NB, Schneider SH, Berchtold P. The "metabolically-obese," normal-weight individual. Am J Clin Nutr,1981,34(8): 1617-1621.
[15] Ruderman N, Chisholm D, Pi-Sunyer X, et al. The metabolically obese, normal-weight individual revisited. Diabetes,1998,47(5): 699-713.
[16] Katsuki A, Sumida Y, Urakawa H, et al. Increased visceral fat and serum levels of triglyceride are associated with insulin resistance in Japanese metabolically obese, normal weight subjects with normal glucose tolerance. Diabetes Care,2003,26(8): 2341-2344.
[17] 张晓娜. 山东地区"正常体重代谢性肥胖"患病特点及危险因素分析. 济南:山东大学,2011.
[18] Dvorak RV, DeNino WF, Ades PA, et al. Phenotypic characteristics associated with insulin resistance in metabolically obese but normal-weight young women. Diabetes, 1999, 48(11): 2210-2214.
[19] Conus F, Allison DB, Rabasa-Lhoret R, et al. Metabolic and behavioral characteristics of metabolically obese but normal-weight women. J Clin Endocrinol Metab,2004,89(10): 5013-5020.
[20] Katsuki A, Urakawa H, Gabazza EC, et al. Quantitative insulin sensitivity check index is a useful indicator of insulin resistance in Japanese metabolically obese, normal-weight subjects with normal glucose tolerance. Endocr J,2005,52(2): 253-257.
[21] Lee K. Metabolically obese but normal weight (MONW) and metabolically healthy but obese (MHO) phenotypes in Koreans: characteristics and health behaviors. Asia Pac J Clin Nutr,2009,18(2): 280-284.
[22] 朱斐. 中国正常体重人群脂肪及其分布与代谢异常的研究. 杭州:浙江大学,2012.
[23] Arnlov J, Sundström J, Ingelsson E, et al. Impact of BMI and the metabolic syndrome on the risk of diabetes in middle-aged men. Diabetes Care,2011,34(1): 61-65.
[24] 曾建. 2 型糖尿病与正常体重代谢性肥胖的关系. 临床医学,2002,22(12): 6-7.
[25] Lemieux I, Pascot A, Couillard C, et al. Hypertriglyceridemic waist: a marker of the atherogenic metabolic triad (hyperinsulinemia; hyperapolipoprotein B; small, dense LDL) in men?. Circulation,2000,102(2): 179-184.
[26] Bardini G, Dicembrini I, Pala L, et al. Hypertriglyceridaemic waist phenotype and β-cell function in subjects with normal and impaired glucose tolerance. Diabet Med, 2011, 28(10): 1229-1233.
[27] St-Pierre J, Lemieux I, Perron P, et al. Relation of the "hypertriglyceridemic waist" phenotype to earlier manifestations of coronary artery disease in patients with glucose intolerance and type 2 diabetes mellitus. Am J Cardiol,2007,99(3): 369-373.
[28] de Graaf FR, Schuijf JD, Scholte AJ, et al. Usefulness of hypertriglyceridemic waist phenotype in type 2 diabetes mellitus to predict the presence of coronary artery disease as assessed by computed tomographic coronary angiography. Am J Cardiol,2010,106(12): 1747-1753.
[29] Taloyan M, Saleh-Stattin N, Johansson SE, et al. Hypertriglyceridemic waist may explain ethnic differences in hypertension among patients with type 2 diabetes in Sweden. BMC Res Notes,2012,5: 474.
[30] Lemieux I, Poirier P, Bergeron J, et al. Hypertriglyceridemic waist: a useful screening phenotype in preventive cardiology?. Can J Cardiol,2007,23 Suppl B: 23B-31B.
[31] Blackburn P, Lemieux I, Lamarche B, et al. Hypertriglyceridemic waist: a simple clinical phenotype associated with coronary artery disease in women. Metabolism,2012,61(1): 56-64.
[32] Zhang M, Gao Y, Chang H, et al. Hypertriglyceridemic-waist phenotype predicts diabetes: a cohort study in Chinese urban adults. BMC Public Health,2012,12: 1081.

(收稿日期:2013-05-07)
(本文编辑:任仙龙　吕相征)

·文献速览·

幼年和成年大鼠对纳米二氧化钛口服毒性的易感性研究

Wang Y, Chen ZJ, Ba T, et al. Susceptibility of young and adult rats to the oral toxicity of titanium dioxide nanoparticles. Small, 2013, 9(9/10): 1742-1752.

纳米二氧化钛作为白色素在食品中使用,可改善食品的质量和口感,从而在食品添加剂领域表现出广阔的应用前景,其中尤以在糖果中的应用最为广泛。故喜爱甜食的儿童,将有更多机会接触到纳米二氧化钛,其对儿童健康的潜在影响十分值得关注。Wang 等通过喂养试验,比较研究了经口摄入 0、10、50、200 mg/kg 体重纳米二氧化钛[平均粒径为(75±15)nm]对幼年(3 周龄)和成年(8 周龄)SD 雄性大鼠所造成的生物学效应差异。结果显示高剂量纳米二氧化钛暴露可导致幼年鼠肝脏水肿、心脏损伤和胃组织中非过敏性肥大细胞活化,而成年鼠仅表现出轻微的肝脏和肾脏损伤、小肠通透性下降和血钼水平降低。此外,纳米二氧化钛可诱导幼年鼠和成年鼠产生还原性应激反应,但其产生机制不同:在幼年鼠中,主要是通过诱导血糖和谷胱甘肽(GSH)水平上升;而在成年鼠中是通过诱导谷胱甘肽过氧化物酶(GSH-Px)活性和氧化型谷胱甘肽(GSSG)水平下降,从而导致血 GSH/GSSG 比率升高。表明纳米二氧化钛的口服毒性受年龄影响,成年鼠和幼年鼠表现出不同的毒性反应。相比成年鼠,幼年鼠对纳米二氧化钛反应更敏感。提示儿童可能是纳米二氧化钛的易感人群,且在制定纳米二氧化钛膳食推荐摄入量时,应针对不同年龄人群设定不同的推荐值。

(陈章健、王云　北京大学医学部公共卫生学院
劳动卫生与环境卫生学系)