

GenBio is Researching the Obesity Epidemic Affecting Over One Billion People Worldwide

ALISO VIEJO, CA, UNITED STATES, May 9, 2025 /EINPresswire.com/ -- The increase in the prevalence of <u>obesity</u> over the last fifty years has been described as a pandemic that increases the risk of many diseases, including cardiovascular disease, diabetes, fatty liver, dementia, and osteoarthritis. For anthocyanins to be effective in chronic diseases such as obesity, they must act on relevant target cells. There is good evidence that anthocyanins interact



with adipocytes, endothelial cells, inflammatory cells, hepatocytes, intestinal cells, and gut microbiota, but they do not act on platelets, skeletal muscle cells, hepatic stellate cells, or pancreatic β -cells.

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Obesity is a problem that nearly every nation in the world is facing, but there is much that we can do to fix it.""

Richard Attias

A systematic review with meta-analysis of randomised clinical trials concluded that anthocyanins lower body mass index and body weight, with the most significant decrease in people from the Middle East. The anti-obesity responses to anthocyanins will likely involve a combination of different mechanisms, including reducing <u>oxidative</u> <u>stress</u>, <u>inflammation</u>, and lipogenesis to increase lipolysis and thermogenesis, regulate satiety, and reverse changes

in the gut microbiota.

Natural products and extracts, including anthocyanins, could act on multiple mechanisms to prevent or reverse obesity. As changes in the gut microbiota may initiate and maintain obesity-associated inflammation, suppressing the microbiota changes by anthocyanins may be relevant in reducing body fat accumulation. Further, gut metabolites such as short-chain fatty acids from dietary sources may prevent obesity, while metabolites from protein in the distal colon, such as ammonia, phenols, and branched-chain amino acids, might worsen metabolic health.

The interplay between inflammation and obesity and its regulation by anthocyanins suggests

that natural products containing anthocyanins are a strategy to reduce obesity-related chronic conditions. For example, the anthocyanins decreased body weight by 0.6 kg in healthy individuals, with increased blood adiponectin and decreased blood leptin concentrations. Obesity has been described as a low-grade, chronic inflammation orchestrated by metabolic cells in response to excess nutrients and energy; this inflammation is different from classic inflammation, which produces redness, swelling, heat, and pain, which is essential for the repair, remodeling, and renewal of tissues.

The inflammatory trigger in the development of obesity is the consumption of foods that cause adipocytes to produce and secrete an array of inflammatory cytokines, known as adipokines. This, in turn, causes immune cells such as macrophages to infiltrate the metabolic tissues, including the adipose, liver, muscle, pancreas, and brain. Obesity-induced inflammation differs from classic inflammation in that it is moderate, creates a proinflammatory environment, and is sustained by the constant stimulus of chronic nutrient intake. This metabolic inflammation then interferes with normal metabolism and disrupts



1 in 8 Suffer from Obesity Worldwide



Purple foods could be the key to weight loss and health | Queensland Times

insulin signaling to produce insulin resistance and lipolysis, disrupting glucose and lipid homeostasis.

Anthocyanins are dark-colored pigments from fruits and vegetables that plants produce as secondary metabolites. These secondary metabolites are produced as a defense mechanism against stress situations, including pathogen infection, low nitrogen conditions, and photo-oxidative damage.

Anthocyanins have been proven effective in reducing obesity and metabolic syndrome in animal models and humans.

Some of the mechanisms of action of anthocyanins as anti-obesity agents are inhibition of lipid absorption, increase in energy expenditure, regulation of lipid metabolism, suppression of food intake, regulation of gut microbiota, amelioration of oxidative stress, and resolution of inflammation.

Recent in vivo research demonstrated reduced visceral adiposity index, total body fat mass, and systolic blood pressure while improving glucose tolerance, liver and cardiovascular structure and function with decreased plasma triglycerides and total cholesterol.

Research into cyanidin glucoside from Davidson's plum, also a native Australian fruit, reduced visceral fat accumulation, total abdominal fat weight, size of retroperitoneal adipocytes, and plasma triglycerides and non-esterified fatty acids, normalized blood pressure, reduced left ventricular stiffness, decreased infiltration of inflammatory cells in both left ventricle and liver, decreased collagen deposition in heart, and reduced both fat vacuoles in liver and obesity-induced degeneration of knee cartilage.

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