Shaping the Future of Metabolic Therapies

Key research studies published in 2025

This curated selection features the most impactful ketogenic and low-carbohydrate studies published in 2025.

Spanning randomized trials, systematic reviews, and long-term clinical data, the research highlights consistent improvements in metabolic health across conditions including diabetes, obesity, cardiometabolic disease, neurological disorders, and cancer.

Together, these findings position ketogenic metabolic therapies and carbohydrate restriction as increasingly evidence-based, measurable, and adaptable tools for addressing metabolic dysfunction and chronic disease.

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Metabolic Conditions

- Type 2 Diabetes
- Obesity
- Cardio Metabolic Health
- Liver Health
- Kidney Health
- Women's Health
- Type 1 Diabetes
- Mental Health
- Neurology
- Cancer

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📌 **Kolivas et al. mHealth low carbohydrate dietary intervention ameliorates glycaemic profile, blood pressure and weight status in people with type 2 diabetes**

https://www.nature.com/articles/s44324-025-00053-6

Digital delivery of low-carb dietary interventions can improve metabolic outcomes in people with type 2 diabetes. In this three-month study, adults with type 2 diabetes following a low-carb diet via a health app saw reductions in both HbA1c and systolic blood pressure. Notably, nearly one-third of those on diabetes medications were able to reduce or discontinue their prescriptions.

📌 **Adams et al. Sustained metabolic improvements in a remotely delivered ketogenic nutrition programme for veterans with type 2 diabetes: A 3-year observational study**

https://pubmed.ncbi.nlm.nih.gov/40521806/

A remote ketogenic nutrition program provided lasting benefits for veterans with type 2 diabetes. In this 3-year observational study of 640 U.S. veterans, long-term participation in a medically supervised ketogenic intervention led to sustained reductions in HbA1c, body weight, and diabetes medication use. Improvements were consistent across subgroups and evident even among those who discontinued the program before 2 years.

📌 **Beretta et al. Low-Carbohydrate Dietary Interventions for Metabolic Control in Individuals With Type 2 Diabetes Mellitus: An Overview of Systematic Reviews**

https://pubmed.ncbi.nlm.nih.gov/39298713/

Low-carbohydrate diets support glycemic control in type 2 diabetes. This overview of systematic reviews and meta-analyses found that low-carbohydrate dietary interventions significantly reduced HbA1c levels in people with type 2 diabetes, particularly within the first 3 to 6 months. However, effects tended to diminish over time, and definitions of low-carbohydrate diets varied across studies. The findings highlight the need for individualized nutritional strategies based on patient characteristics to promote long-term adherence.

📌 **Lan et al. Effect of dietary carbohydrate intake on glycaemic control and insulin resistance in type 2 diabetes: A systematic review and meta-analysis**

https://pubmed.ncbi.nlm.nih.gov/40419389/

Lower carbohydrate intake improves glycemic control and insulin resistance in type 2 diabetes in a dose-dependent manner. This systematic review and dose–response meta-analysis of 38 randomized controlled trials found that each 10% reduction in carbohydrate intake—from 65% down to 5% of daily energy—was associated with significant improvements in HbA1c, fasting glucose, insulin, BMI, and HOMA-IR. Benefits were most pronounced within the first 6 months and occurred independently of calorie restriction. These findings support the use of progressively lower-carbohydrate diets to improve metabolic outcomes in type 2 diabetes.

📌 **Wang et al. A 90 g/day low-carbohydrate diet improved glycemic control without decreasing frailty in older patients with type 2 diabetes: A secondary analysis of a randomized controlled trial**

https://pubmed.ncbi.nlm.nih.gov/40411303/

Carbohydrate restriction could support metabolic health without compromising physical resilience in older patients with type 2 diabetes. In this 18-month randomized trial, the low-carb group showed greater reductions in postprandial glucose and waist size compared to a traditional diabetic diet. Frailty status remained stable across both groups.

📌 **Rondanelli et al. Does the Ketogenic Diet Mediate Inflammation Markers in Obese and Overweight Adults? A Systematic Review and Meta-Analysis of Randomized Clinical Trials**

https://pubmed.ncbi.nlm.nih.gov/39683396/

The ketogenic diet may help reduce inflammation in overweight and obese individuals. This systematic review and meta-analysis of randomized controlled trials found that following a ketogenic diet significantly lowered C-reactive protein, a key marker of systemic inflammation. While reductions in interleukin-6 were observed, they were not statistically significant. Further research is needed to confirm the long-term impact of these findings.

📌 **Leung et al. Effects of ketogenic and low-carbohydrate diets on the body composition of adults with overweight or obesity: A systematic review and meta-analysis of randomised controlled trials**

https://pubmed.ncbi.nlm.nih.gov/39854812/

A ketogenic or low-carbohydrate diet (KD/LCD) may be effective for improving body composition in adults with overweight or obesity. This systematic review and meta-analysis of randomized controlled trials found that KD/LCD significantly reduced body weight, BMI, and body fat percentage, with the most pronounced effects observed when carbohydrate intake was restricted to ≤50g per day for at least one month.

📌 **Buchanan et al. TOWARD, a metabolic health intervention, demonstrates robust 1-year weight loss and cost-savings through deprescription**

https://pubmed.ncbi.nlm.nih.gov/40028226/

A metabolic health intervention combining therapeutic carbohydrate reduction (TCR), remote monitoring, and coaching led to significant weight loss and medication reduction over one year. This study found that participants in the TOWARD program lost an average of 15.5% of their body weight while reducing medication use, including GLP-1 receptor agonists, without compromising weight maintenance. The intervention also demonstrated substantial cost savings, highlighting its potential as a scalable and effective alternative for managing obesity and metabolic disease.

📌 **Wang et al. The impact of intermittent fasting on body composition and cardiometabolic outcomes in overweight and obese adults: a systematic review and meta-analysis of randomized controlled trials**

https://pubmed.ncbi.nlm.nih.gov/40731344/

Intermittent fasting (IF) may support weight loss and metabolic health in people with overweight or obesity, especially with longer interventions. This systematic review and meta-analysis of 15 randomized controlled trials found that IF significantly reduced body weight, BMI, diastolic blood pressure, and improved LDL levels. Longer-term IF (>12 weeks) led to more favorable lipid changes, while alternate-day fasting outperformed time-restricted eating for weight and LDL reduction. Individualized, sustainable protocols are needed to maximize long-term benefits.

📌 **Zheng et al. Are low carbohydrate diet interventions beneficial for metabolic syndrome and its components? A systematic review and meta-analysis of randomized controlled trials**

https://www.nature.com/articles/s41366-025-01822-5

Low-carbohydrate diets (LCDs) improved key cardiometabolic markers in individuals with metabolic syndrome. This systematic review and meta-analysis of 30 randomized trials involving 3,806 adults found that LCD interventions led to consistent reductions in BMI, waist circumference, blood pressure, HbA1c, and triglycerides, along with increases in HDL cholesterol. These results support the use of LCDs as a dietary strategy for managing metabolic syndrome, though further studies are needed to identify optimal interventions and duration.

📌 **Feng et al. Effects of carbohydrate-restricted diets and macronutrient replacements on cardiovascular health and body composition in adults: A meta-analysis of randomized trials**

https://pubmed.ncbi.nlm.nih.gov/40935153/

Individualized carbohydrate-restricted diets (CRDs) improve cardiovascular health and body composition, though effects vary by diet type and macronutrient replacement. This meta-analysis found that CRDs significantly reduced triglycerides, blood pressure, inflammation, and improved HDL, while modestly increasing LDL and total cholesterol. Ketogenic diets yielded greater weight loss but higher LDL. The greatest effects were observed in women and individuals with overweight or obesity, especially in longer interventions.

📌 **De et al. Effect of time restricted feeding with low carbohydrate, high protein and fat diet without calorie restriction on body weight, blood sugar and lipid profile over 6 months: a retrospective cohort study**

https://www.nature.com/articles/s41366-025-01832-3

Combining time-restricted feeding with a low-carbohydrate, high-protein, high-fat diet may enhance weight and glucose management, especially with longer intervention duration. In this retrospective cohort study, participants followed a time-restricted feeding protocol alongside a low-carb, high-protein and fat diet for either 3 or 6 months. Significant improvements in BMI, fasting glucose, HbA1c, and triglycerides were observed after 6 months.

📌 **Khodarahmi et al. Effect of Low-Carbohydrate Diets on C-Reactive Protein Level in Adults: A Systematic Review and Meta-Analysis of Randomized Controlled Trials**

https://pubmed.ncbi.nlm.nih.gov/40688603/

Low-carbohydrate diets may help reduce inflammation, especially in people with higher baseline risk. This systematic review and meta-analysis of 60 trials found modest reductions in C-reactive protein, with greater effects in individuals who were younger, had obesity, or had elevated CRP at baseline. While more research is needed, the results support the potential of low-carb approaches to improve inflammatory profiles.

📌 **Wang et al. Effects of ketogenic diet on muscle mass, strength, aerobic metabolic capacity, and endurance in adults: a systematic review and meta-analysis**

https://pubmed.ncbi.nlm.nih.gov/41035089/

The ketogenic diet enhances fat metabolism without compromising muscle mass or strength in adults. This meta-analysis of 33 studies found that while ketogenic diets significantly reduced fat mass and increased fat oxidation, they had no adverse effects on muscle mass, power, strength, or endurance compared with other dietary approaches. These findings suggest that ketogenic nutrition supports efficient energy utilization during exercise while maintaining muscle integrity.

📌 **Nikparast et al. Dietary and lifestyle indices for hyperinsulinemia and odds of MAFLD in overweight and obese children and adolescents**

https://www.nature.com/articles/s41598-025-88969-3

A lifestyle that promotes higher insulin secretion may increase the risk of metabolic dysfunction-associated fatty liver disease (MAFLD) in overweight and obese children and adolescents. This study found that those with the highest empirical lifestyle index for hyperinsulinemia, which accounts for dietary habits, physical activity, and BMI, had significantly greater odds of developing MAFLD. These findings highlight the importance of managing insulin response through a combination of dietary and lifestyle strategies to reduce metabolic risk in young populations.

📌 **London et al. Effects of Acute Iso- and Hypocaloric Carbohydrate Restriction on Liver Fat and Glucose and Lipid Metabolism**

https://pubmed.ncbi.nlm.nih.gov/40601817/

A low-carb, high-fat (LCHF) diet may rapidly reduce liver fat. In this randomized crossover trial, adults with overweight or obesity followed either a very-low-calorie diet or a LCHF diet, both restricting carbohydrates to ~60 g/day. Liver fat declined only after the LCHF intervention, while both diets improved fasting insulin and triglyceride levels. The findings highlight distinct metabolic responses despite similar carbohydrate restriction.

📌 **Saslow et al. A Very Low-Carbohydrate Program in Adults With Metabolic Dysfunction-Associated Steatotic Liver Disease and Phospholipase Domain-Containing Protein 3 Risk Genotype: Pre-Post Intervention Study**

https://pubmed.ncbi.nlm.nih.gov/39801107/

A very low-carbohydrate diet (VLCD) may help reduce liver fat and improve metabolic health in individuals with genetic risk for metabolic dysfunction–associated steatotic liver disease (MASLD). This pilot study found that participants who adhered to the VLCD experienced improvements in liver health and weight management, with high intervention satisfaction and continued adherence for many. Further research is needed to confirm the long-term impact of this approach in MASLD.

📌 **Pi et al. Low-carbohydrate diets reduce cardiovascular risk factor levels in patients with metabolic dysfunction-associated steatotic liver disease: a systematic review and meta-analysis of randomized controlled trials**

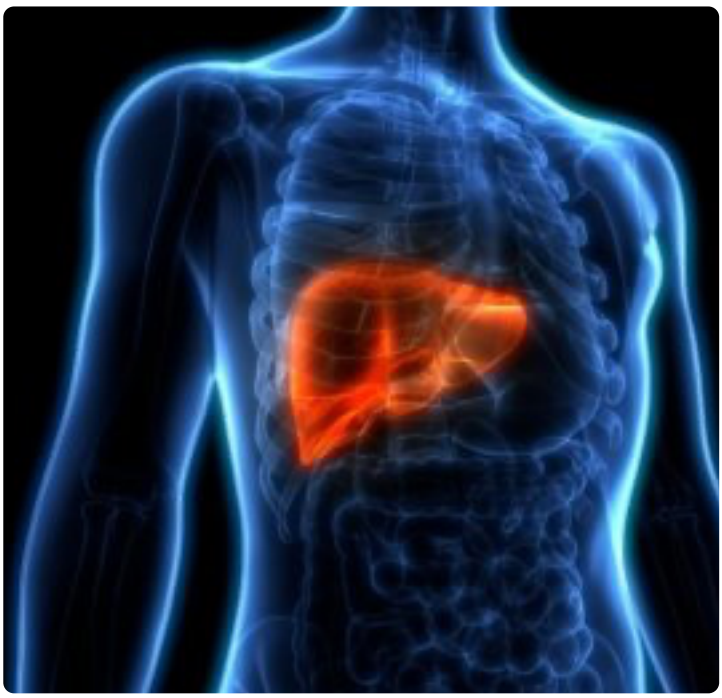
https://pubmed.ncbi.nlm.nih.gov/40933261/

Low-carbohydrate diets (LCDs) improve cardiometabolic health in individuals with metabolic dysfunction-associated steatotic liver disease (MASLD). This meta-analysis found significant reductions in HbA1c, triglycerides, body weight, and BMI, with stricter carb restriction (<26% of energy) producing additional benefits in blood pressure, insulin resistance, and waist circumference. Shorter interventions (<24 weeks) also yielded improvements in glycemic and lipid markers. These findings support the short-term cardiometabolic safety and efficacy of LCDs in MASLD, though further research is needed to evaluate long-term outcomes.

📌 **Gower et al. Beneficial Effects of Carbohydrate Restriction in Type 2 Diabetes Can Be Traced to Changes in Hepatic Metabolism**

https://pubmed.ncbi.nlm.nih.gov/40448689/

Carbohydrate restriction may improve type 2 diabetes by shifting liver metabolism toward fat oxidation. In this 12-week randomized trial, a eucaloric ketogenic diet reduced de novo lipogenesis, liver fat, and circulating pyruvate levels more than a low-fat diet, and was associated with improved beta-cell function.



📌 **Athinarayanan et al. Effects of a continuous remote care intervention including nutritional ketosis on kidney function and inflammation in adults with type 2 diabetes: a post-hoc latent class trajectory analysis**

https://pubmed.ncbi.nlm.nih.gov/40547366/

Nutritional ketosis may help preserve kidney function in type 2 diabetes. In this two-year post-hoc analysis of a continuous care intervention, adults with type 2 diabetes following a ketogenic diet showed improved eGFR and reduced inflammation compared to usual care. Higher β-hydroxybutyrate levels were independently associated with greater kidney function preservation and a dose–response relationship emerged between ketosis adherence and eGFR improvement.

📌 **Li et al. Therapeutic Potential of Ketogenic Interventions for Autosomal-Dominant Polycystic Kidney Disease: A Systematic Review**

https://pubmed.ncbi.nlm.nih.gov/39796576/

Ketogenic interventions may offer therapeutic benefits for autosomal-dominant polycystic kidney disease (ADPKD) by targeting metabolic dysfunction. This systematic review found that ketogenic diets (KDs) and beta-hydroxybutyrate supplementation slowed disease progression in animal models, while human studies reported improvements in kidney function, blood pressure, and weight loss. Larger and longer-term trials are needed to confirm the promising effects of KDs in ADPKD management.

📌 **Liu et al. Ketogenic Diet, Serum Ketone Bodies and Risk of End-Stage Renal Disease in Patients With Diabetic Kidney Disease: A Multi-Cohort Study**

https://pubmed.ncbi.nlm.nih.gov/40793083/

Nutritional ketosis may reduce the risk of kidney failure in patients with diabetic kidney disease. This multi-cohort study found that a higher dietary ketogenic ratio and moderately increased β-hydroxybutyrate levels were associated with a lower incidence of end-stage renal disease. The findings were supported by both observational data and Mendelian randomization, and suggest a potentially protective role of nutritional ketosis in this population.

📌 **Turetta et al. Impact of Ketogenic Diet on Weight, Metabolic, and Endocrine Parameters in Women with Polycystic Ovary Syndrome: A Systematic Review and Meta-Analysis**

https://pubmed.ncbi.nlm.nih.gov/39978319/

A ketogenic diet may significantly improve metabolic and hormonal parameters in overweight or obese women with polycystic ovary syndrome (PCOS). This systematic review and meta-analysis of seven clinical studies found that ketogenic interventions led to meaningful reductions in weight, BMI, blood glucose levels, insulin levels, and HOMA-IR, along with improvements in lipid profiles. Hormonally, the diet lowered luteinizing hormone and testosterone levels while increasing FSH and SHBG, indicating better reproductive hormone balance.

📌 **Tosatti et al. Effects of the very low-carbohydrate ketogenic diet in women with Polycystic Ovary Syndrome: a systematic review with meta-analysis of clinical trials**

https://pubmed.ncbi.nlm.nih.gov/41249157/

The very low-carbohydrate ketogenic diet (VLCKD) may offer meaningful benefits for women with polycystic ovary syndrome (PCOS). This meta-analysis of clinical trials found that VLCKD led to substantial reductions in body weight, waist circumference, and body fat, alongside improvements in key hormonal markers such as testosterone, sex hormone–binding globulin, and the LH/FSH ratio. Measures of glucose metabolism and insulin resistance also improved. These findings indicate that VLCKD can support both metabolic and hormonal balance in PCOS.

📌 **Cooper et al. Ketosis Suppression and Ageing (KetoSAge): The Effect of Suppressing Ketosis on GKI and Liver Biomarkers in Healthy Females**

https://www.mdpi.com/2673-4389/5/3/41

Liver enzymes may serve as early indicators of insulin resistance. In this clinical study, healthy women who habitually maintained nutritional ketosis followed a higher-carbohydrate diet for 21 days. Suppressing ketosis led to increases in glucose-ketone index (GKI), insulin resistance (HOMA-IR), and liver enzymes (ALT and GGT), reflecting signs of early hepatic insulin resistance. These findings highlight the potential utility of routine liver markers as biomarkers of metabolic dysfunction.

Type 1 Diabetes

📌 **Neuman et al. Short-term low-carbohydrate diet decreases body weight and fat mass but not muscle strength in children and young people with type 1 diabetes**

https://www.nature.com/articles/s41430-025-01658-2

Short-term carbohydrate restriction may improve body composition in young people with type 1 diabetes. In this randomized cross-over study, five weeks on a low-carbohydrate diet led to reductions in weight, BMI, and body fat compared with a standard carbohydrate diet, even though calorie intake was the same. Measures of muscle strength remained unchanged, suggesting that carbohydrate restriction can improve metabolic markers without compromising physical performance.

📌 **Levran et al. Low-carbohydrate diet proved effective and safe for youths with type 1 diabetes: A randomised trial**

https://pubmed.ncbi.nlm.nih.gov/39412084/

A low-carbohydrate diet (LCD) may be an effective and safe option for improving blood sugar control in adolescents and young adults with type 1 diabetes. This randomized trial found that both LCD and Mediterranean diet improved glycemic outcomes without increasing the risk of hypoglycemia or adverse metabolic effects. However, the LCD diet showed a greater reduction in high blood sugar episodes, suggesting it may offer additional benefits for glucose management in type 1 diabetes.

📌 **Koutnik et al. Coronary Artery Calcification in Type 1 Diabetes After 10-Year Ketogenic Diet**

https://pubmed.ncbi.nlm.nih.gov/41289606/

Despite concerns about the long-term cardiovascular effects of ketogenic diets in type 1 diabetes, this case report provides evidence suggesting the opposite. A 33-year-old man with type 1 diabetes followed a ketogenic diet for more than 10 years and maintained excellent blood sugar control (HbA1c 5.5%). His coronary artery calcium score (a key marker of atherosclerosis) was 0, indicating no detectable plaque. While this is a single case, it suggests that long-term ketosis may not necessarily worsen cardiovascular risk in type 1 diabetes and warrants further study.

📌 **Decker et al. A pilot study examining a ketogenic diet as an adjunct therapy in college students with major depressive disorder**

https://www.nature.com/articles/s41398-025-03544-8

A ketogenic diet may support both mental and metabolic health in young adults with depression.
In this pilot study, college students with major depressive disorder followed a well-formulated ketogenic diet alongside standard therapy. Nutritional ketosis was achieved 73% of the time, and depressive symptoms dropped by about 70% on both the PHQ-9 and HRSD scales. Participants also experienced improvements in body composition, cognitive function, and biomarkers such as leptin and brain-derived neurotrophic factor.

📌 **Kancsev et al. Glucose homeostasis and cognitive functions in schizophrenia: a systematic review and meta-analysis**

https://www.nature.com/articles/s41598-025-06225-0

Metabolic dysfunction may contribute to cognitive decline in schizophrenia. This systematic review and meta-analysis found that comorbid diabetes is associated with greater impairments in reasoning and processing speed in individuals with schizophrenia. The overall trend suggests that poor glucose homeostasis may exacerbate cognitive dysfunction. These findings support the importance of addressing metabolic health as part of comprehensive care in schizophrenia.

📌 **Janssen-Aguilar et al. Ketogenic Diets and Depression and Anxiety: A Systematic Review and Meta-Analysis**

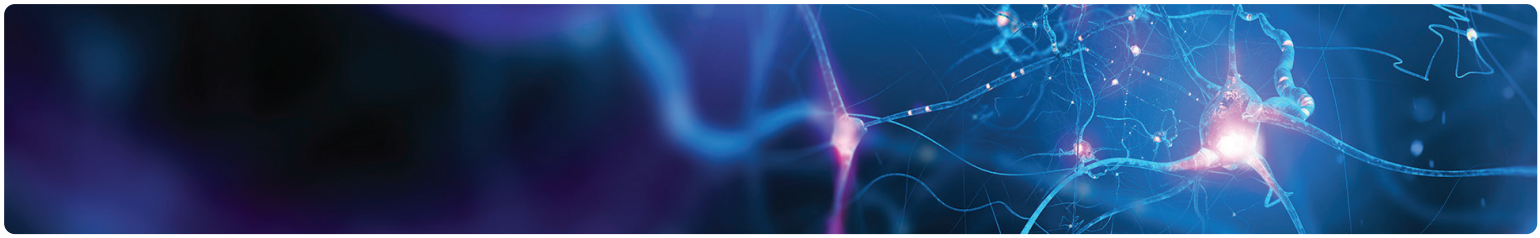
https://pubmed.ncbi.nlm.nih.gov/41191382/

Ketogenic diets may improve depressive symptoms. This systematic review and meta-analysis found that ketogenic interventions were associated with reductions in depressive symptoms, particularly in trials that confirmed ketosis or used very low-carb protocols. No significant effects were observed for anxiety. The findings highlight a potential role for ketogenic diets in mood regulation, warranting larger and longer controlled trials to confirm efficacy and safety.

📌 **Campbell et al. A pilot study of a ketogenic diet in bipolar disorder: clinical, metabolic and magnetic resonance spectroscopy findings**

https://pubmed.ncbi.nlm.nih.gov/39995103/

A ketogenic diet may offer benefits for both mental health and metabolic outcomes in individuals with bipolar disorder. This pilot study found that participants who followed a modified ketogenic diet for 6–8 weeks experienced weight loss, reduced blood pressure, and improved metabolic markers. Notably, higher ketone levels correlated with better mood, increased energy, and reduced anxiety and impulsivity. Brain imaging also revealed changes in glutamate metabolism. These findings support further investigation into ketogenic metabolic therapy for bipolar disorder.



📌 **Neth et al. Consuming a modified Mediterranean ketogenic diet reverses the peripheral lipid signature of Alzheimer's disease in humans**

https://www.nature.com/articles/s43856-024-00682-w

A modified Mediterranean ketogenic diet (MMKD) may help counteract lipid imbalances linked to Alzheimer's disease. The changes that were seen following consumption of the MMKD were the opposite of those typically seen in people with Alzheimer's disease or those likely to develop it. These results suggest that a MMKD could be a safe and inexpensive strategy to support brain health, and potentially mitigate the risk or slow down the development of Alzheimer's disease.

📌 **Bahr et al. Fasting, ketogenic, and anti-inflammatory diets in multiple sclerosis: a randomized controlled trial with 18-month follow-up**

https://pubmed.ncbi.nlm.nih.gov/40836308/

Ketogenic diets and fasting may offer complementary benefits for people with relapsing-remitting multiple sclerosis (RRMS), supporting cognition, mood, and metabolic health. In this 18-month randomized controlled trial, the ketogenic group showed improved cognition, the fasting group showed reduced nerve damage markers and improved mood, and all groups experienced cardiometabolic improvements. This study highlights the potential of dietary interventions as supportive strategies in MS management.

📌 **Reddy et al. The role and benefits of ketogenic diet in modulating inflammation in multiple sclerosis: A systematic review and meta-analysis**

https://pubmed.ncbi.nlm.nih.gov/41067991/

The ketogenic diet can reduce inflammation and improve metabolic balance in multiple sclerosis (MS). This systematic review and meta-analysis found that in people with MS, ketogenic therapy significantly lowered leptin and increased adiponectin levels after 3–6 months, reflecting anti-inflammatory effects. Markers of nerve damage did not change, suggesting neuronal stability, while clinical reports indicated improvements in fatigue, depression, and quality of life.

📌 **Luong et al. A three-week Ketogenic Diet increases Global Cerebral Blood Flow and Brain-Derived Neurotrophic Factor**

https://pubmed.ncbi.nlm.nih.gov/40172923/

A ketogenic diet may support brain health by increasing both cerebral blood flow (CBF) and brain-derived neurotrophic factor (BDNF). In this randomized crossover study, 11 healthy adults experienced a 22% increase in CBF and a 47% rise in BDNF after three weeks on a ketogenic diet compared to a standard diet. These findings point to the potential of ketogenic interventions in conditions marked by reduced CBF.

📌 **van Nieuwenhuizen et al. Ketosis elevates antioxidants and markers of energy metabolism: A 1H MR spectroscopy study**

https://pubmed.ncbi.nlm.nih.gov/40633732/

Acute ketosis may support brain health through metabolic and neurochemical changes. In this study, ketone monoester (but not glucose) increased cerebral energy markers and antioxidants, and reduced GABA, glutamate, and glutamine in the posterior cingulate cortex. These biochemical shifts were linked to improved neural function, as measured by resting-state fMRI. The findings highlight the potential of ketosis-based interventions in brain disorders involving metabolic or oxidative stress.

📌 **Zuo et al. Co-targeting of metabolism using dietary and pharmacologic approaches reduces breast cancer metastatic burden**

https://www.nature.com/articles/s41523-024-00715-6

A ketogenic diet may enhance the effectiveness of endocrine therapy in metastatic breast cancer. This pre-clinical study found that combining a ketogenic diet with fulvestrant (an estrogen receptor-targeting drug) reduced metastatic tumor burden in a liver metastasis model. The diet influenced tumor metabolism, leading to β-hydroxybutyrate accumulation and decreased cancer cell viability. These findings suggest that co-targeting metabolism through dietary and pharmacologic approaches could improve treatment outcomes in ER-positive metastatic breast cancer.

📌 **Tsenkova et al. Ketogenic diet suppresses colorectal cancer through the gut microbiome long chain fatty acid stearate**

https://www.nature.com/articles/s41467-025-56678-0

A ketogenic diet (KD) may suppress colorectal cancer by modifying the gut microbiome and increasing levels of stearic acid, a tumor-suppressing fatty acid. This preclinical study found that KD reduced tumor burden in mice with a humanized microbiome, and microbiome transplants confirmed a causal role in this effect. The KD-induced microbial shift led to higher stearic acid production, which promoted cancer cell apoptosis and reduced inflammatory immune cells in the colon.

📌 **Amaral et al. A phase 1 safety and feasibility trial of a ketogenic diet plus standard of care for patients with recently diagnosed glioblastoma**

https://www.nature.com/articles/s41598-025-06675-6

A supervised ketogenic diet (KD) may be safe and feasible alongside standard chemoradiation in patients with newly diagnosed glioblastoma. In this phase 1 trial, participants followed a 16-week 3:1 KD, all achieving nutritional ketosis without excessive weight loss or diet-related adverse events. Quality of life and cognitive function remained stable or improved, and survival outcomes were promising. These findings support further investigation of KD as an adjunct therapy for glioblastoma in larger trials.

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