

## Reviews of medical journal articles

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These abstracts are brief summaries of articles in recent issues of medical journals. Articles selected are of a general nature for the information of practitioners of herbal medicine. A dominant theme is often present throughout the journals which will be reflected in the reviews.

### Gut microbiota as a therapeutic target in diabetes

He C, Shan Y, Song W. 2015. Targeting gut microbiota as a possible therapy for diabetes. *Nutr Res* 35:361-367.

The incidence of diabetes mellitus (DM) has increased rapidly over recent decades and is associated with significant morbidity, mortality and healthcare associated expense. It is understood that both genetic and environmental factors contribute to the pathogenesis of diabetes. Accumulating evidence also suggests the gut microbiota may contribute to the pathogenesis of DM with numerous studies showing altered gut microbiota composition in diabetic groups. The current review was undertaken to analyse the species alterations of microbiota described in type 1 DM (T1DM) and type 2 DM (T2DM), the possible mechanisms through which the gut may interact with diabetes, and report on the effect of targeted gut treatment strategies in diabetes.

Authors conducted an electronic search of English articles between 2004 and 2014 in Medline using terms gut microbiota, diabetes, metabolic diseases, energy metabolism, immune system, inflammation, gut permeability, and faecal transplant. A number of studies were identified in both humans and animals reporting on gut microbiota and altered species ratios and DM. The results consistently suggested that there is some degree of gut microbial dysbiosis in diabetes; however, there was inconsistency in the species alterations reported. Whilst the T2DM population were commonly associated with increased *Lactobacillus* and decreased *Clostridium* species, a small case-controlled study of children with T1DM reported decreased *Bifidobacterium* and *Lactobacillus* spp. as well as increased *Clostridium* species, which is contradictory to the findings of T2DM patients. Authors noted that the differences in altered species could be influenced by numerous factors including geographical location, age, gender, or food habits. Furthermore, whilst alterations in gut microbiota have been observed and reported, it remains unclear whether the changes are causative or a consequence of diabetic pathology.

A number of possible mechanisms of action are identified in the review by which gut microbiota are associated with DM, including through energy metabolism, inflammation, gut permeability, and the immune system. The gut microbiota is involved in energy

metabolism regulation through a variety of pathways and alterations may be one possible mechanism of action. Low-grade chronic inflammation is currently viewed as a contributor to the development of insulin resistance, diabetes and obesity, and some microbiota species have been associated with increasing concentrations of plasma lipopolysaccharide, a trigger factor for the maintenance of low-grade continuous inflammatory states.

Therapeutic strategies that target gut microbiota for possible prevention and management of diabetes are explored in the review, specifically reporting on the use of prebiotics, probiotics, and faecal transplants. Authors reported the therapeutic effect of prebiotics on metabolic disease has been confirmed, with reference to a study in which participants fed a strict vegetarian diet resulted in compositional changes of the gut microbiota and improved glucose measures. Probiotic treatment was reported of a yoghurt supplementation in humans and an additional mice study with probiotic supplementation. Finally, authors briefly discussed the potential therapeutic strategy and limitations of faecal transplantation describing studies in both humans and mice.

This review provides an interesting overview of the current research regarding the role of gut microbiota and diabetes. Future reviews of the data, including searches of other databases of scientific journals and reporting of the method of inclusion for review, would give better understanding to the importance and relevance of the data included. The research highlights that this area of science is in its infancy and limited data is available. Future research to understand the associations between the microbiota and diabetes, with identification required of the key subspecies of gut microbiota contributing to the incidence and/or development of diabetes is required.

### Traditional dietetic advice compared to low FODMAP diet in irritable bowel syndrome

Böhn L, Störsrud S, Lijebö T, Collin L, Lindfors P, Törnblom H, Simréén M. 2015. Diet low in FODMAPs reduces symptoms of irritable bowel syndrome as well as traditional dietary advice: A randomized controlled trial. *Gastroenterology* 149(6):1399-1407

Despite the majority of irritable bowel syndrome (IBS) patients regarding food to be important triggers of the gastrointestinal (GI) symptoms experienced, few controlled trials exist evaluating dietary approaches to IBS symptom management. Recent evidence has suggested that a diet with reduced content of fermentable

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