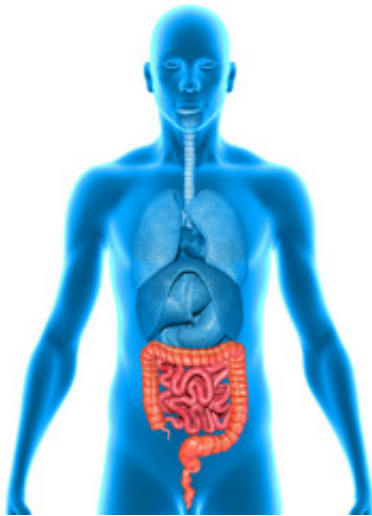


How gut health in obese patients can influence disease progression

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Patients suffering from obesity-related diseases often experience an inflammation of the small intestine which can worsen their condition. A study published recently in the journal *Cell Metabolism*, which was supported by the EU-funded METACARDIS project, has found out why.

By obtaining specific intestinal samples from patients undergoing surgical operations to reduce their obesity and associated diseases – called a [gastric bypass](#) – researchers were able to focus on the jejunum, a portion of the small intestine that scientists know plays a major role in

the absorption of lipids and carbohydrates. However, the jejunum has not been well documented because of its location in the body, and its contribution to metabolic disease is still not fully understood.

METACARDIS researchers cooperated with other scientists to address this challenge. The team's analysis of the jejunum has so far revealed that [chronic inflammation](#) linked to obesity increases the number of [immune system cells](#) called T lymphocytes. These immune system cells produce cytokines, which inhibit insulin sensitivity. Since the action of insulin regulates nutrient absorption and [blood sugar level](#), this immune system phenomenon contributes to the exacerbation of the patient's clinical situation.

Additional clinical studies have shown that increased density of T lymphocytes in the intestine may also be related to other complications associated with obesity such as liver disease. Research has also revealed that projections of the [intestinal mucosa](#) in [obese patients](#) – called villi – are longer than in non-obese subjects.

This means that for some [obese people](#) the surface area of their [small intestine](#) can be increased by up to 250 %, enabling them to absorb more nutrients. This can further enhance their immune system's inflammatory action in this region.

A second study published in *Cell Metabolism* and again supported by METACARDIS found that patients undergoing weight loss surgery experience altered gut microbes. The team found conclusive evidence that the microbiome changes are specific to the surgery and not just a reflection of altered weight changes.

Since surgery always confers a risk, METACARDIS researchers wanted to identify whether non-surgical strategies might achieve the same result. One potential strategy might be to devise novel probiotics as a viable

alternative to weight-loss surgery.

Both of these recently published studies are examples of the clinical and experimental work currently being carried out by METACARDIS researchers, who aim to further scientific understanding of the impact of changes in gut microbiota on cardiometabolic diseases. Specifically, national efforts in Germany, Denmark and France are focussing on innovations in care, translational research and the training of clinicians in cardiometabolic diseases.

The project consortium insists that there is a pressing need to integrate all this knowledge and expertise at the European level in order to deliver significant benefits to patients. Ultimately, the project hopes to translate clinical discoveries into new diagnostics and preventive approaches. Launched in November 2012, the project is scheduled for completion in October 2017.

More information: For further information please visit METACARDIS: www.metacardis.net/

Provided by CORDIS

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