

Helping the obese fight loss of muscle function

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Experts at The University of Nottingham are working on groundbreaking research to determine, for the first time, precisely what damage obesity can inflict on the muscles in our body.

It is hoped their research, funded by the Biotechnology and Biological Sciences Research Council (BBSRC), will lead to more effective treatment strategies for the obese to minimise muscle complications.

Professor Paul Greenhaff in the School of Biomedical Sciences along with Professor Michael Rennie in the School of Graduate Entry Medicine and Health has been awarded nearly £600,000 to carry out the research. Professor Greenhaff said: "This work is essential because it will further our understanding of the health consequences of obesity which is all the more important given the purported obesity epidemic threatening to face the western world in future years."

Based in the School of Biomedical Sciences, Professor Greenhaff and his team have already shown the release of cytokines — small inflammatory-inducing proteins — to coincide with molecular events that slow down the <u>skeletal muscle</u> making process and speed up the rate of muscle breakdown. Cytokines, released from the <u>fat cells</u> of the body, are elevated in obese individuals at low levels for long periods of time and the researches will be investigating what consequences this has on muscle.

Skeletal muscle plays an essential role in our daily lives — it helps us



move, control our posture, and acts as an important fuel source when we become ill. Despite the increasing incidence of obesity and the potential loss of muscle function, the effect of low level and persistent inflammation — induced by obesity — remains largely unknown. Furthermore, the potential negative effects of obesity —induced inflammation on muscle processes — may become even more pronounced as we age due to the natural loss of muscle mass in later years.

Researchers are recruiting a group of obese and healthy normal-weight volunteers. Scientists will measure the rates of synthesis and breakdown of muscle proteins in conjunction with rates of carbohydrate oxidation in obese individuals and compare them to rates determined in healthy non-obese volunteers and see how they differ. Muscle biopsies will be taken to examine the molecular signalling events that underpin these processes.

The researchers also want to know if an insulin sensitising drug, known to limit the release of cytokines from fat cells, can reverse any effect of obesity on the synthesis and breakdown of muscle proteins and whether this could lead to functional improvements. These studies will determine, for the first time, the effect of <u>obesity</u> associated low-dose chronic inflammation on essential <u>muscle</u> events.

Professor Greenhaff said: "Despite the serious implications, there is a dearth of information on this topic. Our research is of such magnitude that if we can find the answers, it will create a multitude of future research avenues that could be explored by the wider scientific community. This could have wide-reaching implications for the many disease states characterised by low-grade chronic inflammation."

Source: University of Nottingham (<u>news</u> : <u>web</u>)



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