New generation asthma drug could improve metabolism

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Formoterol, a new generation asthma medication, shows great promise for improving fat and protein metabolism, say Australian researchers, who have tested this effect in a small sample of men.

The research team comprises members of Professor Ken Ho's lab from Sydney's Garvan Institute of Medical Research as well as Professor Ric Day, a clinical pharmacologist from St. Vincent's Hospital.

Study leader, endocrinologist Dr Paul Lee, focused his PhD research on how various hormones affect metabolism. Of central importance is a class of hormones called catecholamines, which regulate heart rate, metabolism and breathing.

Formoterol is a synthetic catecholamine, the metabolic effects of which have not previously been studied in people. Therapy doses given to animals, however, have shown that it stimulates metabolism without affecting the heart.

"We have known for a long time that catecholamine influences the way the body handles nutrients, in particular fat and protein," said Lee.

"The generation of drugs before formoterol was exploited in the livestock industry around 20 years ago – to reduce the fat and increase the protein content of meat. Unfortunately, these older drugs also caused a faster heart rate."

"Formoterol is a new generation of this class of medication. It is highly selective for the kind of catecholamine receptors found in the lungs, and not those in the heart."

"The new drug is also more selective for a similar receptor found in muscle and fat. In theory at least, it should have beneficial metabolic effects – like the older class of medication – without affecting the heart."

Lee sourced the drug in its oral form, found the dose needed to give a metabolic effect, and gave it to 8 healthy men over a week.

"Energy metabolism increased by more than 10%, fat burning increased by more than 25%, while protein burning fell by 15%," he said.

"So although whole body metabolism increased, these men burned fat while reducing the burning of protein. That's a good thing because in the long run these effects may lead to a loss in fat mass and an increase in muscle.

"In this study, all 8 subjects tolerated the medication well – without any significant increase in heart rate."

The next step will be to test the drug over a longer period in a larger sample of people to determine if the beneficial effects translate into improvement in body composition, health and function.

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