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Press release
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**New ultraconcentrated and ultrarapid-acting insulin:
Clinical trials at Med Uni Graz a great success**

Graz, 16 March 2023: An estimated 800,000 people in Austria have diabetes. In people with type 1 diabetes, the pancreas produces too little or no insulin. In those with type 2 diabetes, insulin is less effective. In both cases, the result is a high blood sugar level. While type 1 diabetics must receive insulin therapy their entire lives, most type 2 diabetics can initially achieve their treatment goals by leading a healthy lifestyle and taking pills that lower blood sugar levels. Yet as the disease progresses, insulin production decreases and these patients also need extra insulin. Due to the rise in obesity, treatment of Type 2 diabetes frequently requires higher doses of insulin that can no longer be administered in an injection. As a result, manufacturers have developed products with higher concentrations. A current Med Uni Graz clinical trial has tested the new ultraconcentrated and ultrarapid-acting insulin product AT278 from the British company Arecor—a new insulin aspart formulation with a concentration of 500 IU/ml (U500).

Ultrarapid-acting insulin for effective blood sugar management

"Fast-acting products that are similar to insulin have an advantage over human insulin in that they can more easily ward off spikes in blood sugar after meals and prevent low blood sugar levels caused by them acting too long in the bloodstream," explains Eva Svehlikova from the Med Uni Graz Division of Endocrinology and Diabetology, the first author of a study that has been published in *Diabetes Care*. "These products should do a better job of adjusting the insulin level to the natural release of insulin and make it possible to administer insulin at the same time as meals or even afterwards. However, tests have indicated that even fast-acting insulin must be injected about 15 to 20 minutes before a meal for optimal adjustment of the blood sugar level.

Two years ago, a new ultrarapid-acting insulin product—AT247, a 100 IU/ml (U100) formulation of insulin aspart—was investigated at Med Uni Graz. Starting with the U100 standard concentration, the new insulin aspart formulation was clearly more rapidly available and faster acting than the other products on the market. The current trial has investigated whether these ultrarapid-acting properties can be maintained in the U500 variant.

New ultrarapid-acting U500 insulin in clinical development

The current trial involving type 1 diabetics has shown that AT278 enters the bloodstream just as rapidly after injection and also acts more quickly, even when administered at a high concentration using less material.

Currently there are no ultraconcentrated, fast-acting insulin products on the market. AT278 has the potential to be the first product of its kind for diabetics. "The publication of the trial data in a peer-reviewed journal promotes the visibility of AT278 as a promising next generation insulin product that improves postprandial glycemic control thanks to its superior PK/PD profile. Furthermore, it makes it possible to reduce the amount of injected material and to avoid having to split the individual dose into several injections for diabetics whose daily insulin requirement is high," says Eva Svehlikova. An ultraconcentrated, fast-acting insulin might also take research one step closer to the miniaturization of diabetes technology and drive forward the development of the next generation of insulin pumps.

Further information and contact

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Eva Svehlikova is a specialist in internal medicine with a focus on endocrinology and diabetology and the head of the Clinical Trials Unit at the Center for Basic Medical Research at the Medical University of Graz. A member of Thomas Pieber's research group at the Division of Endocrinology and Diabetology, Department of Internal Medicine, Medical University of Graz, her emphasis is clinical research on diabetes and metabolism.

Link to publication:

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