

## Micro-pellets with controlled release of glucose

### Development status

#### Clinical trials

### IP protection status

Czech patent application - n. 2013-338 Pharmaceutical composition with controlled release of metabolically active sugar

### Partnering strategy

*Collaboration, licensing*



### Institution



**Fakultní nemocnice Hradec Králové**

### Challenge

Hypoglycaemia (a decrease of sugar blood level) as an acute complication of diabetes mellitus type 1 and 2, occurs with an inappropriate relationship between the drug used to treat diabetes, energy consumption and the amount of ingested sugars. Hypoglycemic episodes are also a major obstacle for achieving optimal controlled blood sugar levels, as patients preventively receive many sugars, which may particularly damage their vascular system. Hypoglycaemia does not represent a threat to the patient alone, but the short-term attention deficit or loss of consciousness can cause injury or death. Repeated hypoglycaemia aggravates patient compliance and recurrent prolonged hypoglycaemia may lead to brain damage. Patients with hypoglycaemia often get into socially unpleasant situations. As a result, attention is affected and, for example, the ability to drive, study or work is decreased. Hypoglycaemia alone is responsible for approximately 2 - 4% of deaths in type 1 diabetics.

### Description

We developed a unique form of glucose - glucose pellets with controlled release of glucose (2, 3, 4 or 6 hours after ingestion) that compensates hypoglycaemia and reduces the dose of sugars taken preventively by patients. Typically, it is the prevention of night hypoglycaemia, hypoglycaemia during physical activity of children in collective sports, at children in school and pre-school facilities due to imbalances between the drug used to treat diabetes (e.g. insulin), energy consumption and the amount of ingested sugars. The glucose-containing dosage form releases the necessary amount of glucose required to maintain a sufficient level of glucose in the required time to compensate the effect of insulin or oral antidiabetic drugs. The applied amount of glucose in a single dose is 10 grams, corresponding to one diabetological glucose dose. Pellets can be ingested at a convenient time (e. g. for breakfast) in advance before a critical period of time, before a diabetic child goes to a nursery or school while the parent is not sure whether the baby is eating a snack or a lunch which would otherwise provide normal glucose blood level. This improves the "compliance" of the treated patients - the adherence to the desired

treatment regimen and the comfort of the treatment. Repeated use of glucose pellets by diabetic patients and other users is the main advantage of this technology. Furthermore, a non-medical use of pellets is considered - in sportsmen with increased physical activity where sufficient energy is provided by ingestion of pellets without interruption of physical activity (e.g. running or swimming for long distances) or for drivers for long distances.

## Commercial opportunity

It is clear from the decision of the State Institute for Drug Control that this application form of glucose use is not a pharmaceutical, so its production, distribution and sale do not have to follow strict pharmaceutical legislation. Therefore, glucose pellets will be traded on the food market. This product can benefit from a worldwide trend of increasing diabetes incidence and other metabolic disorders. Big market potential is also available in non-medical applications, especially for endurance athletes.