

**Patent: Method for “in vitro” proliferation of cells obtained from endodermal tissues**

**Inventors:** Francisco Martín Bermudo, Bernat Soria Escoms and Adrián Khoo

**Holders:** Universidad Pablo de Olavide and Fundación Progreso y Salud

### Description

The present invention refers to a **method for fast *in vitro* proliferation of cells obtained from endodermal tissues**, preferably from **pancreatic beta cells**. It also refers to the **cell culture medium inducing proliferation used in said method**, to the **cells and cell populations that can be obtained** by the same and to the **drugs containing these cells or cell populations for their use in somatic cell therapy for lesions or diseases in endoderm-derived tissues**, preferably for **lesions or pancreas diseases**, most probably of ***Diabetes mellitus***.



### Need or problem solved

- *Diabetes mellitus* is a serious health problem because of both its prevalence and the critical chronic complications that it develops. A mayor issue in the development of diabetes is the reduction in number of the pancreatic beta cells producing insulin and the inability to produce sufficient insulin in order to maintain normoglycaemia.
- Often, diabetes is treated with an exogenous provision of insulin, but one of the **most promising treatments is the transplant of pancreatic islets**, which provides better glycaemic control and avoids the daily administration of insulin. However, there are still **limitations to the transplant of pancreatic islets**, the most significant being **the scarce amount of tissue for their transplant and immunosuppression**. Consequently, stem cell **therapy is a very promising alternative**.
- Thus, experts have invented this **method that can rapidly induce the *in vitro* proliferation of pancreatic beta cells producing insulin obtained from stem cells previously isolated from pancreatic islets or from endodermal tissues**.
- This method would compensate **for the lack of mass in the beta cells to be transplanted and avoid the onerous immunosuppression regimes to which patients are submitted**

### Innovative issues/Competitive advantages

- The present invention makes it possible to obtain a **greater cell mass in a shorter period of time**, when compared with conventional methods.
- The **loss of the phenotype** and of **biological functionality** of the cells during their expansion in the culture is avoided.
- Definitely, the “*in vitro*” cell proliferation of the invention makes it possible to expand the mass of pancreatic beta cells and, in general, of cells obtained from endodermal tissues, beyond the existing protocols, while preserving their phenotype, this being especially relevant in cell therapy of diseases such as diabetes, where the lack of pancreatic beta cells for transplant is the major problem.

### Types of interested companies

- Biomedicine laboratories
- Research units
- Public health agencies
- Pharmaceutical companies