

Peculiarities of chickens' glucose transport and mechanisms involved

Edouard Coudert, Estelle Cailleau-Audouin, Christophe Praud, Pascal Froment, Sophie Tesseraud, Sonia Metayer-Coustard

▶ **To cite this version:**

Edouard Coudert, Estelle Cailleau-Audouin, Christophe Praud, Pascal Froment, Sophie Tesseraud, et al.. Peculiarities of chickens' glucose transport and mechanisms involved. 20. European Symposium on Poultry Nutrition (ESPN), Aug 2015, Prague, Czech Republic. 2015. hal-02738478

HAL Id: hal-02738478
https://hal.inrae.fr/hal-02738478

Submitted on 2 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

ESPN Prague 2015

Peculiarities of chickens' glucose transport and mechanisms involved

Edouard Coudert[1], Estelle Cailleau-Audouin[1], Christophe Praud[1], Pascal Froment[2], Sophie Tesseraud[1], Sonia Métayer-Coustard[1]

[1]INRA, UR83 Unité de Recherches Avicoles, 37380 Nouzilly
[2]INRA, UMR0085 Unité de Physiologie de la Reproduction et des Comportements, 37380 Nouzilly

Facilitated transport of glucose into cells is catalyzed by specific transporters called glucose transporters (GLUTs). Glucose transport is the limiting step of glucose metabolism and is regulated by insulin. In mammals, GLUT4 has been described as the major insulin-sensitive glucose transporter. The underlying mechanism uses the PI3K signaling pathway to regulate the translocation of GLUT-4 from internal vesicles to plasma membrane in order to let the glucose transport into the cell. Previous studies in our laboratory showed that glucose transport can be sensitive to insulin despite the lack of GLUT4 in chickens. The aim of our study was to determine which mechanisms were involved in this insulin-sensitive glucose transport in chickens.

We used chicken primary muscle cells and a non-radioactive kit to measure glucose transport via 2-deoxyglucose transport. Glucose transport was measured in presence or in absence of different activators or different inhibitors: insulin as an activator, phloretin as an inhibitor known to block glucose transport by changing membrane conformation and LY294002 as an inhibitor of the PI3K pathway.

As expected, insulin increased glucose transport. Moreover, phloretin and LY294002 both inhibited glucose transport into cells as described in mammals. Further studies are currently conducted to find the insulin-sensitive glucose transporter(s) involved in this mechanism.