Accepted Manuscript

Vitamin K1 Inversely Correlates with Glycemia and Insulin Resistance in Patients with Type 2 Diabetes (T2D) and Positively Regulates SIRT1/AMPK Pathway of Glucose Metabolism in Liver of T2D Mice and Hepatocytes Cultured in High Glucose

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PII: S0955-2863(17)30538-7

DOI: doi: 10.1016/j.jnutbio.2017.09.022

Reference: JNB 7858

To appear in: The Journal of Nutritional Biochemistry

Received date: 19 June 2017 Revised date: 18 September 2017 Accepted date: 28 September 2017

Please cite this article as: Dihingia Anjum, Ozah Dibyajyoti, Ghosh Shatadal, Sarkar Abhijit, Baruah Pranab Kumar, Kalita Jatin, Sil Parames C., Manna Prasenjit, Vitamin K1 Inversely Correlates with Glycemia and Insulin Resistance in Patients with Type 2 Diabetes (T2D) and Positively Regulates SIRT1/AMPK Pathway of Glucose Metabolism in Liver of T2D Mice and Hepatocytes Cultured in High Glucose, *The Journal of Nutritional Biochemistry* (2017), doi: 10.1016/j.jnutbio.2017.09.022

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Revised Manuscript (ID# JNB_2017_449.R1)

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2 Diabetes (T2D) and Positively Regulates SIRT1/AMPK Pathway of Glucose Metabolism in

Liver of T2D Mice and Hepatocytes Cultured in High Glucose

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Running title: Circulating Vitamin K1 and glucose metabolism in T2D

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Key words: Type 2 Diabetes; Insulin resistance; Hyperglycemia; Vitamin K1; SIRT1/AMPK;

Hepatic glucose metabolism

The abbreviations used are: AMPK, AMP activated protein kinase; CPT1A, carnitine palmitoyltransferase

1A; GK, glucokinase, G6P, glucose 6 phosphate; G6Pase, glucose 6 phosphatase; GGCX, gamma glutamyl

carboxylase; GHb, glycated hemoglobin; GLUT2, glucose transporter 2; IL-6, interleukin 6, MCP-1,

monocyte chemoattractant protein-1;NF-κB, nuclear factor kappa B; PI3K, phosphoinositide 3-kinase;

PPARα, peroxisome proliferator-activated receptor alphα; PTEN, phosphatase and tensin homolog; SIRT1,

sirtuin 1; ucMGP, uncarboxylated matrix gla protein; VK1, vitamin K1; VKOR, vitamin K epoxide

reductase

1

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