

## Breath acetone as a potential marker of metabolic flexibility

© Anastasia M. Ivanova,<sup>1,2\*+</sup> and Anatoly I. Ginak<sup>1</sup>

<sup>1</sup> Department of Molecular Biotechnology, Saint-Petersburg State Institute of Technology, Moskovsky Ave., 26, Saint-Petersburg, 190013, Russia. Phone: +7 (9312) 67-94-69. E-mail: ivanovanastia91@mail.ru

<sup>2</sup> AMA Co. Ltd. 17 line V.O. 4-6, Saint-Petersburg, 199034, Russia.  
Phone: 007-812-380-7699. E-mail: ai@amamed.ru

\*Supervising author; +Corresponding author

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### Abstract

A brief analysis of the metabolic flexibility and its role in human body was made. Metabolic flexibility is the ability to respond or adapt to conditional changes in metabolic demand. This broad concept has been propagated to explain insulin resistance and mechanisms governing fuel selection between glucose and fatty acids, highlighting the metabolic inflexibility of obesity and diabetes. Monitoring is relevant because disrupted metabolic flexibility, or metabolic inflexibility, however, is associated with many pathological conditions and may underlie the epidemic changes in metabolic disease.

The number of the blood ketones increases when the human body tries to adapt metabolism and aptly utilize moderate amounts fatty acids in case the glucose is shortage. Acetone is formed by the non-enzymatic decarboxylation of acetoacetic acid. Acetone cannot be used by the tissues. It appears in urine, sweat and exhaled air. The correlation between breath acetone and lipid oxidation was studied to ensure that the level buildup is associated with increased lipid oxidation. Breath acetone concentration is well understood to be a non-invasive measure of ketosis and more accurately reflects the rate of lipid oxidation than urine or sweat acetone concentrations. Due to the thin capillary wall, ventilation and gaseous metabolism contributes rapid transmission of short-term and minimum acetone concentration changes in tissues or blood-stream, that up regulates correlation of metabolic disorders and acetone concentration in exhaled air.

Metabolic flexibility control method using the breath acetone is relevant and the future potential is attributed for personalized diagnostics, pre-diagnosis and therapeutic modalities correction is huge.

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