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### Effects of two natural enriched plant extracts against type 2 diabetes

There is mounting evidence that chronic inflammation in type 2 diabetes (T2D) is a leading cause of the progression of the disease. T2D is linked to aging and obesity, also occurring at epidemic rates worldwide, causing chronic low-grade inflammation through macrophage infiltration thus contributing to T2D. Complications of T2D resulting from low-grade inflammation are related to chronic hyperglycemia and its induced formation of advanced glycation end products (AGE) and reactive oxygen species (ROS). The activation of transcription factor NF $\kappa$ B leads to transcription of inflammatory cytokines, chemokines, and adipokines which exacerbates this pathological state by positive feedback mechanism leading to cell damage and organ pathology such as nephropathy, cardiovascular disease, retinopathy and neuropathy. Current therapies against diabetes involve control of glucose or insulin resistance (e.g. metformin, pioglitazone) and pharmacological anti-inflammatory regimens (e.g. aspirin, ibuprofen) designed to target specific steps in the inflammation cascade. Current drugs have well known side effects, particularly GI and cardiovascular side effects that are likely to be prohibitive for chronic use. Consequently, natural compounds or extracts effective against T2D with potentially lesser side effects may be advantageous for long-term therapy. We developed an enriched black tea extract and orange peel extract which showed strong anti-inflammatory effects at an early stage in the inflammatory cascade as demonstrated throughout cell-based in vitro, animal in vivo as well as in human pilot studies. Anti-diabetic regimens affecting different pathways as promising strategy against type 2 diabetes are discussed.

### Biography

Alexander Gossau has more than 18 years experience in Cell and Molecular Biology in academia and industry in the US and Europe. Appointed in 2017 as Associate Professor at the Dept. of Science (Biology), City University of New York, BMCC. Since 2009 also serving as a Visiting Professor in the Dept. of Chemical Biology of Rutgers University. Prior appointments as Research Assistant Professor at Rutgers University (2006 - 2009) and Postdoctoral Researcher at the University of Bremen in Germany and University of Stavanger in Norway. Received Ph.D. from the University of Bremen, Germany, and Master's degree from the Universities of Oldenburg and Goettingen, Germany. As Head of Cell and Molecular Biology at WellGen, Inc. leadership roles in research & development and project management in the field of molecular medicine, medicinal food, inflammation, and cancer research for 12 years. In 2013, appointed as Associate Editor-in-Chief of *Food Science and Human Wellness* (Elsevier). In 2017, Editorial Board Member of *Movement and Nutrition in Health and Disease*. Reviewer for various international journals. Published research manuscripts and reviews in top tier, peer-reviewed journals, patent applications and many presentations in international academic and corporate meetings. Collaborations with various academic institutions, various professional memberships. Raised over \$3 MM from government and corporate fundings to support research.

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