

Antihypertensives and fat reducers have complex effects on metabolism

Neuherberg, Germany, 14 May 2014. Medicines that lower the blood pressure and the blood fat levels influence diverse metabolic pathways and not just their target structure. A team of researchers from the Helmholtz Zentrum München was able to find indications of this on the basis of changes in metabolic products when these drugs are taken. The scientists reported in the 'European Journal of Epidemiology' that these data are contributing to a more comprehensive understanding of the mode of action of these frequently prescribed drug groups.

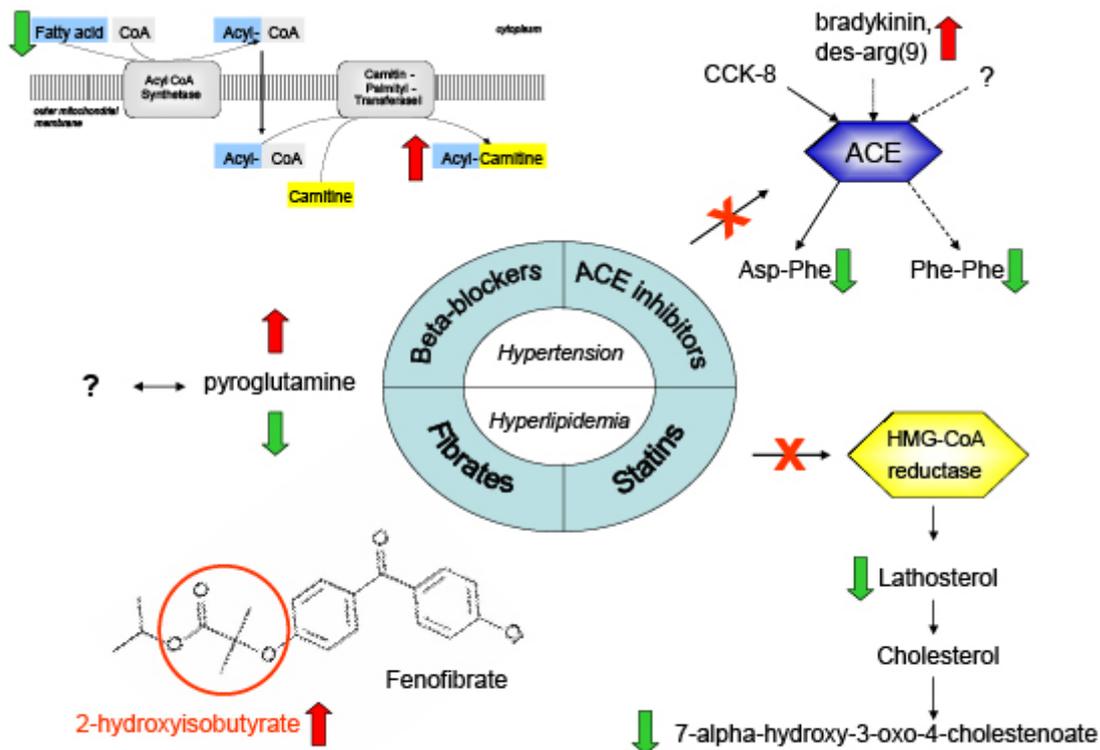


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The Helmholtz Zentrum München scientists carried out measurements of various metabolites (intermediate products such as amino acids, carbohydrates, vitamins, fatty acids and DNA building blocks) in more than 1700 participants in the population-based KORA study*. They then compared these data with the ingestion of medicines used to combat elevated blood pressure or increased blood fat levels. Other influences on the metabolism, such as age, sex, body weight and life style, were also taken into consideration for the evaluation.

Medication influences metabolic performance

On the basis of the population-based data that were gathered under everyday conditions, the team headed by Dr. Elisabeth Altmaier, Dr. Gabi Kastenmüller and Dr. Christian Gieger was able to determine possible new correlations between the drugs and a change in the metabolic performance. First author Altmaier reports that "the drugs influence the metabolism in diverse ways. Our results supply important insights into the complex mode of action of these drug groups that go beyond their blood pressure or fat reducing effects". For example, lower levels of free fatty acids were observed in the blood when beta blockers, drugs that reduce the blood pressure, were taken.



Summary of the main drug-metabolite associations; Source: HMGU/ European Journal of Epidemiology

Knowledge of the entire range of effects allows individualized therapy

The drugs that were examined, such as beta blockers or statins, are among the most frequently prescribed medicines. Extensive knowledge of the influenced signal pathways allows an assessment of the effects and side-effects. "If we know a substance's entire range of effects we can use medicines more selectively, which means in the sense of an individualized therapy", Altmaier concludes.

The objective of the Helmholtz Zentrum München is to develop new approaches to the personalized diagnosis, therapy and prevention of the major widespread diseases.

Further Information

* For more than 20 years, the research platform [Cooperative Health Research in the Augsburg Region \(KORA\)](#) has been collecting and analyzing data on the health of thousands of people living in the Augsburg region. The objective is to elucidate the effects of environmental factors, behavior and genes. KORA focuses on the development and course of chronic diseases, in particular myocardial infarction and diabetes mellitus. Risk factors are analyzed with regard to individual health behavior (e.g. smoking, diet, exercise), environmental factors (e.g. air pollution, noise) and genetics. From the perspective of health care research, questions regarding the utilization of health care resources and the cost of health care are also studied.

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[Link to publication](#)

The [Helmholtz Zentrum München](#), the German Research Center for Environmental Health, pursues the goal of developing personalized medicine, i.e. a customized approach to the diagnosis, treatment and prevention of widespread diseases such as diabetes mellitus and lung disease. To that end, it investigates the interaction of genetics, environmental factors and lifestyle. The Helmholtz Zentrum München is headquartered in Neuherberg in the north of Munich. It has about 2,200 staff members and is a member of the Helmholtz Association, Germany's largest scientific organization, a community of 18 scientific-technical and medical-biological research centers with some 34,000 staff members.

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