

PRESS RELEASE:

Experimental cancer therapy with digitalis-like drugs under question

In a study published in the journal Plos ONE, Scientists at the Research Center for Molecular Medicine of the Austrian Academy of Sciences (CeMM) and the Department of Laboratory Medicine at the Medical University Vienna challenge the experimental use of cardiac glycosides in cancer patients.

Since the mid 1960s there have been reports about a group of digitalis-like drugs used for chronic heart disease having potential anti-cancer effects. However, definite proof and an understanding of these proposed anti-cancer effects have been lacking. Nonetheless, these drugs are now being clinically tested in cancer patients in Europe and the United States. In the Plos ONE paper the authors report that cardiac glycosides are potent protein synthesis inhibitors and that this is the likely explanation for their toxicity. Furthermore, as other protein synthesis inhibitors have failed as anti-cancer drugs, they argue that it is very unlikely that cardiac glycosides will be beneficial for patients with cancer.

Matthias Mayerhofer, one of the senior authors on the paper explains: "We got interested in these drugs when we noticed that they inhibited a particular cancer protein that we study in the lab. After initial excitement we however quickly found out that this was due to an unspecific effect on protein synthesis. We were very surprised that nobody had reported this before."

Andrea Perne and colleagues further show that the block in protein synthesis is due to inhibition of the sodium/potassium pump and that in contrast to humans, mice were highly resistant to the drug. This difference in physiology means that previously published experiments with mice have to be interpreted with care.

Sebastian Nijman, co-corresponding author: "We were actually shocked that these drugs are being tested in cancer patients. We believe that particularly in the light of our study there is little – if any– scientific basis for this and we think that these clinical trials should be followed with extra care or perhaps even halted."

Oswald Wagner, Head of KIMCL, und Giulio Superti-Furga, Director of CeMM, are satisfied with the results of the cooperation. Superti-Furga „CeMM was founded to work on a more patient-oriented medicine for the future. Though this is beyond the scope of any single research institute, together with our partners at the Medical University of Vienna and the General Hospital we are well on our way."

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„Cardiac Glycosides Induce Cell Death in Human Cells by Inhibiting General Protein Synthesis“

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