Biosimilars-2013
OMICS Group Conferences
Accelerating Scientific Discovery
2nd International Conference and Exhibition on
Biowaivers & Biosimilars
September 23-25, 2013 Raleigh, North Carolina, USA

Use of cardiac glycosides for inhibition of C-reactive protein and treatment of atherosclerosis – road map to clinical applications

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Abstract

The role of C-reactive protein (CRP) in cardiovascular disease is matter of ongoing and controversial debates. CRP represents an established marker of cardiovascular risk, but furthermore there is also evidence that CRP may be causally involved in atherosclerosis. C-reactive protein can be detected in all stages of atherosclerotic lesions, colocalizes with pro-inflammatory molecules and seems to mediate LDL uptake into macrophages. If CRP indeed represents an independent cardiovascular risk factor it consequently may become a target for drug development. Thus specific inhibition of C-reactive protein could become a novel treatment of inflammatory and cardiovascular disease.

Although considerable effort has been made in order to design specific CRP inhibitors only limited success was achieved. Recently, inhibition of hepatic CRP synthesis surprisingly led to the identification of cardiac glycosides. This observation may indicate a promising approach for further drug development on the one hand and may help ending the discussion about its potential causal role in cardiovascular disease on the other hand. Since more than 200 years cardiac glycosides represent established drugs for treatment of heart failure and tachycardic atrial fibrillation. Their long clinical use turned them into familiar drugs with calculable toxicity and side effects. Thus, clinical studies can be performed easier with respect to ethical considerations. Furthermore, reformulation of established substances is an attractive strategy in modern drug development. In contrast, patent law considerations could limit further deployment in this direction.

We here present design, chances and limitations of our clinical trial on inhibition of CRP synthesis by cardiac glycosides.

Biography

Oliver Zimmermann has completed his M.D. at the age of 27 years from Ulm University, Germany. He is now consultant at the *Cardiovascular Center Oberallgäu-Kempten*, Germany. He has published more than 15 papers in reputed journals and serves as a reviewer in the field of cardiovascular inflammation and myocardial regeneration for international peer reviewed journals.