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### New non synthetic antibacterial agents challenging the active and persistent forms of *Borrelia subspecies*

Lyme borreliosis is a tick borne bacterial infection caused by the spirochete *Borrelia burgdorferi* sensu lato. It has become a major public health concern for humans and animals worldwide. The primary treatment is based on the administration of antibiotics. However, relapse often occurs when such treatment is withdrawn. One of possible explanations for this clinical observation is the ability of *Borrelia sp.* to adapt different persistent forms. Thus, there is a continuous search for new compounds that would be effective not only against spirochetes but also these persisters. Naturally occurring agents signify a growing theme in antimicrobial defense. Often they represent a starting point for the development of novel treatment approaches and/or serve as a base for their modified alternatives as well. However, little is known about their anti-borrelia efficacy. Thus, 50 non synthetic agents such as plant derived active compounds and plant extracts were tested in this study for their *in vitro* effectiveness against active and latent forms of *Borrelia burgdorferi sensu stricto* (predominant in the USA) and *Borrelia garinii* (predominant in Eurasia). From that screening, several new substances have been identified. These, described in this work, agents showed to have significant effects against both active and persistent forms of tested *Borrelia sp.* Moreover, enhanced reciprocal cooperation with major antibiotics currently prescribed for Lyme disease was observed. This study reveals their potential to combat these bacteria. The depictions here reported are part of ongoing preclinical development plan that could bring them to clinical trials in the near future as well.

### Biography

Anna Goc has obtained her MS and PhD from the Jagiellonian University, Poland. She has completed her Postdoctoral training at Case Western Reserve University, Cleveland, OH and the University of Georgia, Athens, GA. She has also worked as a Research Biologist at the VA Medical Center, Augusta, GA. She is currently working as a Head of Infectious Diseases Division at Dr. Rath Research Institute, Santa Clara CA; she leads a Lyme disease project. She has published over 30 peer-reviewed publications, two book chapters and has presented her research at numerous national and international scientific meetings. She is also an active Member on one Editorial Board and the recipient of several national and international awards.

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