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The biochemistry and physiology of the redox cofactor mycofactocin

Mycofactocin is a recently discovered ribosomally synthesized and post-translationally modified (RiPP) redox cofactor, encoded and synthesized by the gene cluster *mftABCDEF* [1]. It is present in the genomes of a variety of different bacteria and even archaea [2] but appears to be particularly conserved in mycobacteria [1], hence the name. It was proposed that mycofactocin acts as an electron acceptor for specific alcohol dehydrogenases *in vivo* [2]. The biosynthesis of mycofactocin was shown to be induced by the presence of ethanol and is necessary for alcohol metabolism in *Mycolicibacterium smegmatis* [3]. In addition, it was found that the redox-active core molecule can be glycosylated by MftF with up to nine hexoses in β -1,4-glycosidic bonds [4]. Until today, the role of mycofactocin *in vivo* remains widely unknown. Therefore, this project is aimed at further investigation of the physiology, biochemistry, and biosynthesis of mycofactocin and its derivatives. These investigations will be realized by state-of-the-art “-omics” methods, such as targeted and untargeted metabolomics using high-resolution liquid chromatography coupled to mass spectrometry as well as classical methods in genetics and biochemistry.

References

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Publications

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