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The Novel Lipid Mediator $PD1_{n\text{-}3\ DPA}$: Structural Elucidation, Biosynthesis, Bioactions and Total Organic Synthesis

Several novel lipid mediators families coined specialized pro-resolving mediators (SPMs) are formed during the resolution phase of acute inflammation in animal models of self-limited inflammation. The SPMs are biosynthesized from the dietary n-3 polyunsaturated fatty acids (PUFAs) eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). The resolvins, protectins and maresins are examples of such SPMs. In 2013 Dalli, Colas and Serhan reported a new SPM that was coined $PD1_{n\text{-}3\ DPA}$.[1] This C22 n-3 oxygenated SPM is biosynthesized from n-3 docosapentaenoic acid (n-3 DPA) that can accumulate in humans.

In this presentation, the structural elucidation and the biosynthetic pathway, together with the potent anti-inflammatory and pro-resolving properties of the $PD1_{n\text{-}3\ DPA}$, will be presented. The first total organic synthesis will briefly also be outlined. The results presented contribute new knowledge on the structure-function of the growing numbers of endogenous novel SPMs.