Lipid Autacoid Medicine: A New Fundament for Pain Medicine

Jan M Keppel Hesselink
Institute for Neuropathic Pain, the Netherlands

*Corresponding author: Jan M Keppel Hesselink, Institute for Neuropathic Pain, the Netherlands, Tel: +31306939022; E-mail: jan@neuropathie.ru

Letter to Editor

Autacoid medicine is based on formulations containing autacoids or autacoid derivatives, wherein autacoids are ‘local tissue hormones’ or modulating factors, which affect the function of nearby cells and/or tissues, and are subsequently metabolized by the same tissues [1]. Some neurotransmitters such as NO, ATP and a number of endocannabinoids such as 2-Arachidonoylglycerol (2-AG) can also be classified as autacoids. The word autacoid originates from the Greek autos, meaning self and akos, meaning a drug. Thus, autacoids are ‘self-healing’ molecules.

As early as 1981, it was recognized that autacoids can be regarded as mediators of a variety of immune functions, and that the concentration of autacoids in tissues during inflammation is sufficient to allow them to attract a number of immune cells to the site of inflammation, thereby regulating both cell-mediated and humoral immunity [2]. Most of these autacoids play a key role in chronic pain states. For a long time, it has been acknowledged that these “self-medications” can function as an alternative to a number of drugs.

Autocoid medicine builds upon the innate immune mechanisms of defense and repair. Autocoid therapy offers a number of advantages over the New Chemical Entity (NCE) based therapies, the most prominent of them being lack of associated toxic metabolites by virtue of these molecules being endogenous. Therefore, long-term safety issues are ruled out.

Lipid autacoids are perhaps the most well studied of all autacoids. These autacoids and their derivatives create a healthy balance in case of overactive inflammation, and aid in the resolution of the inflammation and the subsequent wound healing. This feature is one of the key aspects of lipid autacoid role in neuropathic pain. The lipid autacoid family is very diverse, and varies from small molecular-weight signaling lipids to high-molecular-weight glycerophospholipids, in addition to their many structural isomers. This makes profiling of these molecules very difficult.

Alessandro Bruni from the Department of Pharmacology, University of Padova in 1988 was perhaps the first to identify that lipid autacoids were synthesized in the plasma [3]. Palmitoylethanolamide (PEA) is one of the most crucial members of the lipid autacoid family. It was identified by the Italian Nobel laureate Rita Levi-Montalcini in the 1990s [4]. She was the first to highlight the (neuro-) repair function of autacoids.

The first patents on lipid autacoids were filed by a small Italian company, Life Group Spa in the 1990s. In these patents the research of Levi-Montalcini on PEA its derivatives and their many structural isomers. Serious Research and Development in this field would open the door to safer and much more effective pain medication. Now that a number of patents pertaining to autacoids have expired, new possibilities have opened up for generic formulations of autacoids to enter the market.
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Disclosure

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References

5. https://www.google.ch/patents/US5506224