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Effects of bilastine stimulation on frequencies and phenotype of human classical, intermediate and non-classical monocytes

Urszula Radzikowska[1,2], Paulina Kaczmarczyk[1], Dawid Groth[1], Kamil Grubczak[1], Paula Zembko[1], Andrzej Eljaszewicz[1,2], Milena Sokolowska[2], Piotr Kuna[3], Anna Bodzenta-Łukaszyk[4], Marcin Moniuszko[1,4,]

[1] *Department of Regenerative Medicine and Immune Regulation, Medical University of Bialystok,*

[2] *Swiss Institute for Allergy and Asthma Research and Christine Kühne-Center for Allergy Research and Education (CK-CARE), Davos, Switzerland.*

[3] *Department of Internal Medicine, Asthma and Allergy, Barlicki University Hospital, Medical University of Lodz*

[4] *Department of Allergology and Internal Medicine, Medical University of Bialystok*

Background

Bilastine, a selective histamine H1 receptor antagonist was demonstrated to decrease local production of interleukin-6 and -8 in urticaria patients. Interestingly, some therapeutic benefits of antihistamine drugs have been linked to their potential anti-inflammatory properties that were not directly associated with histamine receptor activation. To date, potential immunomodulatory activities of bilastine have not been fully elucidated

Aims

To investigate whether bilastine can affect the phenotype and numbers of monocyte subsets that play crucial roles in regulating inflammatory processes.

Methods

Peripheral blood mononuclear cells from healthy donors were isolated by density gradient centrifugation and cultured in the presence of various bilastine concentrations. The changes in the frequencies of monocyte subsets as well as the levels of surface HLA-DR and CD163 expression and the TNF-α production were assessed by multi-color flow cytometry.

Results

Bilastine, at therapeutic concentrations, led to significant decrease in frequencies of activated monocytes that expressed activation and maturation marker, HLA-DR. Notably, at 10- to 1000-fold higher than therapeutic concentrations, bilastine significantly decreased frequencies of classical monocytes, non-classical monocytes and increased frequencies of intermediate monocytes. Frequencies of CD163+ monocyte subsets were altered only at concentrations 100-fold higher than therapeutic. In contrast, bilastine treatment at either therapeutic or suboptimal concentrations did not alter TNF-α production in any monocyte subset.

Conclusions

Our data suggest, that bilastine, in addition to its anti-histamine activities, can bear a potential for modulating inflammatory processes by directly affecting innate immune cells.

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