Optimizing of the basophil activation test: Comparison of different basophil identification markers.

Flowcytometric identification of basophils is a prerequisite for measuring activation of basophils with IgE-dependent or IgE-independent stimuli. Aim of this study was to compare different marker combinations in a simultaneous multicolor flowcytometric measurement. Ten patients with a grass pollen allergy and three controls were included in the study. Basophilic cells were gated by using anti-CCR3, anti-IgE, anti-CRTH2, anti-CD203c, and anti-CD3. Cells were activated by a monoclonal anti-Fc?RI antibody, N-formyl-methionyl-leucyl-phenylalanine (fMLP), and the allergen extract Phleum pratense. The activation marker anti-CD63 was used. The highest relative number of basophils was found with anti-CCR3+ cells, anti-IgE+ and anti-IgE+/anti-CD203c+ cells, the lowest with CRTH2+/CD203c+/CD3- cells. A very good and good concordance of CCR3+ cells was seen with CCR3+/CD3- cells and CRTH2+/CD203c+/CD3- cells in all experiments. The contamination of the CCR3+ population with CD3+ cells and the contamination of the IgE+-population with CCR3- cells and CD203- cells were the lowest compared to all other marker combinations. As the highest relative number of basophils was identified by anti-CCR3 followed by the anti-IgE and anti-IgE/antiCD203c positive population in most cases, these...
markers can generally be recommended for identification of basophils. If a basophil population with very high purity is needed, anti-IgE should be chosen.