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Differential toxicity on monocytes and monocyte-derived dendritic Cells: a new tool to differentiate allergens from irritants?

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Phenotypic activation of monocyte-derived dendritic cells has been proposed as an *in vitro* alternative assay to discriminate potential sensitizers from irritants, but the sensitivity of the assay remains controversial. In this study, we first determined the dynamic range of expression of activation/maturation markers on human monocyte-derived dendritic cells cultured in the presence or absence of transforming growth factor β (TGF β). On day three of culture, most monocytes had already differentiated into dendritic cells that expressed low levels of costimulatory molecules especially in the presence TGF β -treatment of 3-day-old TGF β -treated monocyte-derived dendritic cells with several chemicals at sub-toxic concentrations induced significant phenotypic changes for all the strong and mild sensitizers tested, whereas the irritant sodium lauryl sulfate had no effect. However, a very large variability was observed among the experiments. Most interestingly, we could show here for the first time that at concentrations sub-toxic for monocyte-derived dendritic cells all the allergens tested induced monocyte apoptosis within 2 days of culture. In contrast, sodium lauryl sulfate displayed similar toxicity on monocytes and monocyte-derived dendritic cells and these results were confirmed with other irritants such as benzoic acid or methyl-salicylate. Although testing of far more chemicals is required, these results indicate that differential toxicity of chemicals to monocytes and monocyte-derived dendritic cells could be a rapid, simple and valuable tool to differentiate sensitizers from irritants.

Use of associating polymers as multifunctional thickeners: studies of Their structure in aqueous solutions via nmr, qels, fluorescence, And rheology measurements

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The solution properties of an associating polymer were studied by NMR, quasi-elastic light scattering (QELS), fluorescence, and rheology measurements. An associative thickening (AT) polymer was designed having a nonionic poly(ethylene oxide) backbone with long alkyl chains at both ends to achieve high viscosity even at relatively high salt concentrations and over a wide pH range. This study focuses on the associative state of the polymer in aqueous solutions at various polymer concentrations. In a fluorescence probe study using pyrene a spectral change in the I_3/I_1 ratio was observed for pyrene at a polymer concentration (C_p) of $3 \times 10^{-4}\%$, indicating an apparent critical concentration (cmc) of the amphiphilic polymer. The viscosity, self-diffusion coefficient (D_{sel}), and hydrodynamic size (R_h) distribution measurements at various C_p all suggest that there is a second transition at $C_p \approx 0.4\%$. Although we observed the discontinuity in viscosity, D_{sel} , and R_h at $C_p \approx 0.4\%$, no changes in the relaxation times (T_1 and T_2) were recognized for either the alkyl chain or the ethylene oxide moiety of the polymer at $C_p = 0.1-1\%$. These data suggest that there are no structural changes or phase transitions at $C_p \approx 0.4\%$, but that intermolecular networks are presumably formed by bridging of the end alkyl groups of the polymer, which is driven by hydrophobic forces. Because the polymer forms networks by hydrophobic interaction and the polymer itself is nonionic, the viscosity of the polymer solution was influenced very little by either the addition of salt or a pH change, as would be expected. The dynamic viscoelastic study revealed that the polymer solution exhibits a single mode Maxwell type relaxation behavior with a terminal relaxation time of about 0.61 s, which