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## Micellar properties and antimicrobial activity of a mixed surfactant system constituted by Sodium dodecyl sulfate and Cetylpyridinium chloride

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**Statement of the Problem:** Surfactants are widely used in different applications such as detergents, foaming and antifoaming agents, cosmetics, floatation agents and pharmaceuticals etc. The detergents and personal care products use nearly 60% of all surfactants. The biggest advantage surfactants is the distinct toxic activity towards organisms due to their surface activity. Their choice depends on many factors among which solubility of the surfactants and their CMC play an important role. The aim of this study was to determine the stability and physicochemical and antimicrobial properties of mixed surfactant systems.

**Methodology & Theoretical Orientation:** Micellar properties of Sodium dodecyl sulfate (NaDS) was examined in the presence of Cetylpyridinium chloride (CPC) by means of surface tension, viscosity, dye solubilization, cloud point (CP) measurements. Antimicrobial activities of single and binary systems were also investigated.

**Findings:** A decrease in critical micelle concentration (CMC) and increase in solubilizing power for NaDS was observed with increasing CPC concentration. At the highest CPC concentration studied (0.1 M), the surface tension decreased up to 51 mN/m. Also, viscosity results showed growth in NaDS micelles (50 mM) up to the 0.1 M CPC concentration. Antimicrobial activity of NaDS, CPC and NaDS in presence of CPC was investigated against ten different strains of bacteria and a yeast which was not investigated up to now. The susceptibilities of the microorganism were determined by the agar diffusion method.

**Conclusion & Significance:** The results showed that NaDS and CPC have a antimicrobial activity but NaDS in presence of CPC has not antimicrobial activity on the bacterial and yeast.

### Biography

Deniz Sahin Tas obtained her PhD in Chemistry from Gazi University (Turkey) in 2006. She worked as a Research Assistant in the same department. She is pursuing her Post-doctoral in Chemical Engineering from Universitat of Rovira I Virgili, Spain. She published scientific publications (all of them in Science Citation Index and Science Citation Index Expanded list journals), presentations at scientific conferences. She has two book chapters in press/preparation. Her research interests include electrorheological properties in polymer chemistry, polymer characterization, micellar enhanced ultrafiltration and water purification.

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