Abstract: alpha-lactalbumin (α-LA) is a small globular protein with stable and detectable molten globule state in special conditions. Effect of different surfactants on α-LA structure has been studied. In this study the effect of cationic Gemini (12-2-12, 2Br<sup>-</sup>) surfactant on the structure of bovine and camel α-LA was studied, using fluorescence and circular dichroism spectroscopy techniques. The experiments were carried out in tris buffer (pH 7.5) containing calcium chloride 2 mM. Gemini surfactant at low concentration induced partially folded conformation in both α-LA species. α-LA secondary structure is stable against denaturation and it remains native-like in the presence of gemini, just small increase in alpha helical content of α-LA observed when the molar ratio of surfactant/protein reaches ten. Intrinsic fluorescence increased with increasing concentration range of the gemini and the maximum of emission shifted to longer wavelengths. It means that tertiary structure decreased with increasing concentration range of the gemini and it is accompanied with Trp exposure to the solvent. Concentration of gemini in the midpoint of transition, was higher for camel α-La than that of bovine counterpart. Favorable electrostatic interactions between the two charged head groups and the negatively charged centers of protein and also hydrophobic interactions between hydrocarbon tails of gemini with hydrophobic side chains of α-LA, both may influence protein denaturation. Interaction with gemini surfactants like other ionic surfactants leads to substantial conformational change of α-LA which may stimulate their ability of self-association or aggregation.