**Title:** Binding of oxali-palladium to β-lactoglobulin: A spectroscopic approach  

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**Abstract:** In recent years, medical chemistry has been faced with palladium (II) complexes with promising activity against tumor cell lines. Hence, spectroscopic and biological studies have been carried out in order to obtain information on structure-activity relationships for systems involving palladium (II) atoms. β-Lactoglobulin (β-LG), as a member of lipocalin family, according to its structure is known to bind a wide range of ligands. Also, numerous studies have been shown the benefits of β-LG as a carrier for drug delivery system. In the present work, the interaction of new synthesized oxali-palladium with β-LG was investigated in the aqueous solution with ambient temperatures (25 and 37 °C) by means of spectroscopic methods including fluorescence and circular dichroism (CD). The results of fluorescence measurements illustrated that the oxali-palladium quenches the intrinsic fluorescence intensity of β-LG with combined mechanism so that the static quenching is predominant. Using modified Stern-Volmer equation the number of binding sites was determined close to 2 at both temperatures of 25 and 37 °C. Also, thermodynamic parameters of ΔH° and ΔS° of this interaction were calculated, which revealed the hydrophobic force plays a major role in the binding process. CD measurements showed that the secondary structure of β-LG does not significant change by the interaction of oxali-palladium. We believe that these results are very helpful in pharmaceutical sciences, especially in drug delivery systems whereas can be open the door to new world of pharmacology.

**Keywords:** β-LG, Oxali-palladium, spectroscopy, binding force, quenching

**Presentation:** Poster