Introduction: Serum lactate is a molecular marker related to recent pathophysiological events and an indicator of death risk in both adults and children, in situations such as hypovolemic, cardiogenic or septic shock. The hyperlactemia occurs when arterial blood lactate concentration is equal to or greater than 5 mmol/L and the arterial pH is less than 7.35. As not all patients with tissue hypoperfusion present clinical signs, hyperlactatemia may be an important marker for these disorders in critically ill patients. Furthermore, lactate determination has several other applications, including sport and food industry. Objectives: In this work, we develop a platform for the monitoring of serum lactate levels using lactate oxidase enzyme as probe. Materials and Methods: The graphite electrode was functionalized with poly(3-hydroxybenzoic acid), [poly(3-HBA)], electrodeposited by cyclic voltammetry (20 scans, 50 mVs⁻¹). After, 25 µl of lactate oxidase (2 units) was added onto the modified electrode surface at 37°C. To confirm the modification of the surface with the polymer and the immobilization of the probe, the redox pair ferrocyanide/ferricyanide (K₃Fe(CN)₆/ K₄Fe(CN)₆, 5 mmol.L⁻¹) was used as an indicator. Results: The modified electrode presents a shift to more anodic potentials in relation to the bare graphite electrode, suggesting the electrodeposition of the electroactive material. However, with the immobilization of the probe, the current value was increased and the potential was shifted to more cathodic values, facilitating the electron transfer from ferrocyanide to the bioelectrode. Conclusions: These results indicate that the surface was successfully modified at each step. This bioelectrode can be used, in the future, for the molecular detection of the lactate in real samples.

Acknowledgements: PROPP-UFU, FAPEMIG, CAPES, CNPq.
Key Words: bioelectrode; diagnosis; lactate