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PII: S0039-9140(16)31035-9  
DOI: <http://dx.doi.org/10.1016/j.talanta.2016.12.083>  
Reference: TAL17173

To appear in: *Talanta*

Received date: 9 October 2016  
Revised date: 27 December 2016  
Accepted date: 29 December 2016

Cite this article as: Rupesh K. Mishra, Akhtar Hayat, Geetesh K. Mishra, Gaëlle Catanante, Vinay Sharma and Jean-Louis Marty, A novel colorimetric competitive aptamer assay for lysozyme detection based on superparamagnetic nanobeads, *Talanta*, <http://dx.doi.org/10.1016/j.talanta.2016.12.083>

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## **A novel colorimetric competitive aptamer assay for lysozyme detection based on superparamagnetic nanobeads**

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### **Abstract**

Lysozyme (Lys) commonly presents in wines and are known to cause toxicological impact on human health. The need of highly sensitive and reliable detection methods are evident in such matrix. In this work, we developed a competitive aptamer based assay for detection of Lys by employing carboxylated magnetic beads as a support to immobilize the target molecule Lys. The used aptamer sequence was biotinylated which further binds with Streptavidin-Alkaline phosphatase (Stp-ALP) in the micro wells. Colorimetric tests were performed in order to optimize different experimental parameters. The Lys assay showed a good linearity in the range of 5-140 nM with a limit of detection (LOD) 10 nM. The mid-point value ( $IC_{50}$ ) 110 nM and the analysis time (60 min) validated the developed aptasensor as a promising tool for routine use. The assay displayed good recoveries of Lys in the range 99.00-99.27% and was demonstrated for the detection of Lys in wine samples.

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