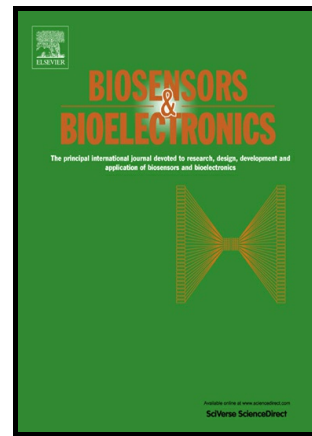# Author's Accepted Manuscript

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Ultra-high sensitivity of the non-immunological affinity of graphene oxide-peptide-based surface plasmon resonance biosensors to detect human chorionic gonadotropin

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Abstract

Specific peptide aptamers can be used in place of expensive antibody proteins, and they are gaining increasing importance as sensing probes due to their potential in the development of non-immunological assays with high sensitivity, affinity and specificity for human chorionic gonadotropin (hCG) protein. We combined graphene oxide (GO) sheets with a specific peptide aptamer to create a novel, simple and label-free tool to detect abnormalities at an early stage of pregnancy, a GO-peptide-based surface plasmon resonance (SPR) biosensor. This is the first binding interface experiment to successfully demonstrate binding specificity in kinetic analysis biomechanics in peptide aptamers and GO sheets. In addition to the improved affinity offered by the high compatibility with the target hCG protein, the major advantage of GO-peptide-based