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Diagnostic accuracy of anti-gliadin antibodies in non celiac gluten sensitivity (NCGS) Patients: A novel statistical evaluation

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Background: Gluten is the target of several diseases such as wheat allergy (WA), celiac disease (CD) and non celiac gluten sensitivity (NCGS). NCGS is a new clinical entity characterized by gastrointestinal and extraintestinal symptoms comparable to those of CD patients but to date still lacking of specific biomarkers so that NCGS diagnosis can be reached only by excluding CD and WA and based on the direct association between gluten ingestion and symptoms onset. Previous studies showed that anti-gliadin antibodies (AGA) IgG are the most prevalent positive antibodies in NCGS population.

Aim: The first aim of the study was to estimate AGA distribution and prevalence in a NCGS population. The second aim was to identify a serological pattern to help the diagnosis and or to mark the NCGS disease.

Methods: Sera from 59 patients with suspected NCGS, 90 CD patients and 70 healthy individuals were assessed for IgG/IgA AGA, IgG/IgA deamidated gliadin peptide antibodies (DGP-AGA), IgA tissue transglutaminase antibodies (tTGA) and IgA endomysial antibodies (EmA) and HLA typing (Eurospital, Trieste, Italy).

Results: We evaluated data by a dual statistical approach; Logistic Regression and Receiver Operating Characteristic (ROC) analysis; therefore, we showed a poor diagnostic accuracy of AGA IgA and IgG in NCGS condition.

Conclusion: Our preliminary data showed that IgG AGA did not seem to be an adequately sensitive marker, even if it has been recently proposed as promising marker for NCGS condition, together with negativity for other celiac disease related antibodies. More in-depth clinical and laboratory researches are mandatory.

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Comparative investigations for Adenovirus quantification: Plastic or natural antibodies?

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Comparative investigation for Adenovirus recognition and detection was conducted using natural and plastic antibodies. A direct and sandwich ELISA assays were first developed for adenovirus quantification using natural antibodies on the gold chip of a Surface Plasmon Resonance (SPR) sensor. The assays were optimized and detection limits for the direct and sandwich assays were found to be 0.3 pM and 0.008 pM, respectively. The kinetic data analyses were performed for the different adenovirus recognition methods and cross-reactivity studies were also conducted using MS2 bacteriophage as control virus and an excellent specificity was achieved with all assays types. As an alternative to antibodies the use of molecularly imprinted polymer (MIP) technology for the specific and sensitive recognition of viruses in combination with biosensors was also investigated in this work. Plastic antibodies (MIPs nanoparticles) were designed and synthesized for Adenovirus by employing a novel solid phase production method. MIP receptors were then characterized using dynamic light scattering (DLS) and transmission electron microscopy (TEM) prior to their immobilization on the Surface Plasmon Resonance (SPR) sensor chip as affinity receptor for Adenovirus detection. Two different templates were also imprinted as control MIPs (vancomycin-MIP and the bacteriophage MS2-MIP). The specific recognition of Adenovirus was investigated in the concentration range of 0.01-20 pM and the limit of detection was achieved as 0.02 pM. This work highlights the suitability of plastic antibodies for the detection of viruses and makes comparison with natural antibodies as the current sensing molecules for viruses.

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