

P.15.- Affinity capture by immunomagnetic beads : an original approach for the detection of prion proteins in environmental biofilms

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Several data support the hypothesis that the environment could be a reservoir for the pathological infectious agent in Transmissible Spongiform Encephalopathies (TSEs). Some experiments reported previously show that healthy sheep have contracted TSEs upon introduction into fields and enclosures previously occupied by infected animals. It was also demonstrated that residual infectivity was retained in garden soil in prion scrapie-infected hamster brain material interred for 3 years (1). The maintenance of the resistance properties of TSE agent in the environment may be due to its adsorption to components of the soil matrices. In this study, we are investigating the potential contamination by TSEs agents of well defined complex environment samples such as bacterial biofilms.

Methods:

We focussed on the detection of the spiked prion proteins in environmental matrices (activated sludge originating from waste water station) by combining two approaches. The first technique was based on the use of magnetic beads and allowed the selective extraction of the prion proteins from complex matrices, the elimination of all contaminants and also the concentration of the sample before analysis. The second technique called the microextraction patented in our laboratory (2) is a physicochemical procedure which alters the structure of environmental samples and makes it suitable for the immuno-detection analysis.

Results & Discussion:

By combining the two techniques and using a magnet, it was very easy to recover the prions proteins linked to immunomagnetic beads. The successful immunocapture of the prion proteins has been evaluated using classical ELISA (*Enzyme-Linked Immunosorbent Assay*). As the immunomagnetic capture ELISA method is simple and easy to apply, this technique could be useful for the detection of prion protein in environmental samples.

Keywords

Immunomagnetic bead, prion