“IN VITRO” CHARACTERIZATION OF BETA-AMYLOID CONTENT AND BINDING CAPACITY IN THERAPEUTIC ALBUMIN AND PLASMA FROM HEALTHY DONORS

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In an ongoing clinical trial Alzheimer's disease patients' endogenous albumin is partially replaced with Human Albumin Grifols® through plasma exchange, showing Aβ mobilization in plasmapheresis-treated patients, who scored better in cognitive tests. We showed that therapeutic albumin binds synthetic Aβ1-42 peptides (sAβ1-42).

Aims: Confirming no Aβ detection in Grifols' albumin and its capacity to bind sAβ1-42 using healthy donors' plasma for comparison.

Methods: Aβ content analysed using in-house validated ELISA tests: hAmyloid β40/β42 ELISA (HS) (The Genetics Co.); INNOTEST® β-Amyloid β1-42 RUO HS (Innogenetics). ABtest® 40 and 42 (Araclon Biotech) also employed for albumin samples. Albumin binding to immobilized sAβ1-42 studied by SPR, using human plasma and insulin as comparators. Fluid phase experiments performed mixing fixed amounts of sAβ1-42 with increasing albumin or plasma quantities, determining residual Aβ by immunoassay.

Results: Albumin Aβ content (n=17 lots): always below the lowest standard curve valid point, for all ELISAs used. Healthy donors' plasma pools (plasmapheresis (n=13) or whole blood donation (n=13)): always quantifiable Aβ1-42 levels, but no Aβ1-42 being quantified. SPR assays (at 0.5 mg/ml protein), showed that therapeutic albumin binding to immobilized sAβ1-42 (RU=36) is lower than human plasma's (RU=83). Insulin (negative control), yielded negligible binding (RU=4). Fluid phase experiments showed up to 41% reduction of ELISA measurable sAβ1-42 after incubation with therapeutic albumin (0-45 mg/ml) and up to 70% reduction with plasma samples.

Conclusions: Grifols' albumin Aβ content is below the most sensitive ELISAs detection limits used and is able to bind “in vitro” an Aβ1-42 peptide with the human sequence.