Dec. 8th, 2025

Sysmex Corporation

【Overview presentation】

The 18th Clinical Trials on Alzheimer's Disease conference (CTAD)

Analytical and clinical validation of the APOE genotyping PCR test in patients from the Phase III Clarity AD trial

Authors	Kozue Matsuda[1], Hikaru Hattori[1], Nozomi Kojima[1], Shota Nakada[1], Miwa Matsubara[1], Takashi Hirose[1], Yoshiyuki Fukushima[1], Naoko Ashida[1], Kota Nagai[2], Michio Kanekiyo[3], Pallavi Sachdev[3], Shobha Dhadda[3], Hayato Niiro[1], Motonari Daitho[1] [1]Sysmex Corporation [2]Eisai Co., Ltd., Tokyo, Japan [3]Eisai Inc., Nutley, NJ, USA.
Overview presentation	**Objectives** Anti-amyloid beta antibody drugs have been clinically administrated for the treatment of Alzheimer's disease (AD). ARIA (Amyloid-Related Imaging Abnormalities) has been reported as an adverse reaction, and the risk of ARIA increases with *APOE4* status. It is becoming increasingly important to determine the *APOE* genotype prior to starting treatment, in order to assess the risk of adverse effects. In this study, we developed "PrismGuide APOE Genotyping Kit" (Marketing Authorization Holder: Sysmex Corporation) that allows for distinguishing six *APOE* genotypes and evaluated the analytical performance. Additionally, we performed a clinical performance study using patient samples from the Phase III trial of lecanemab (Clarity AD) to evaluate clinical validity of this test. This kit was approved by MHLW in June 2025 in Japan, and preparations for clinical implementation are currently underway. **Methods** The *APOE* genotype is determined by the combination of two single nucleotide polymorphisms (SNPs), resulting in six genotypes: *APOE ε2*2, ε2*3, ε2*4, ε3*3, ε3*4, and ε4*4*. The kit consists of two assays targeting each SNP and utilizes the genotyping function of a PCR instrument to analyze DNA extracted from

	whole blood samples. The *APOE* genotype is determined by combining the automated results output from each assay. Analytical performance was evaluated using synthetic DNA samples with known *APOE* genotypes and DNA extracted from whole blood. For clinical performance testing, *APOE* genotyping was conducted on patient samples (N = 150) from the Clarity AD trial, and concordance with reference method results was assessed by *APOEε4* carrier status and genotype. **Results** Using three different lots of the kit, measurements were performed on both synthetic DNA and DNA extracted from whole blood. The accuracy was 100% across all *APOE* genotypes. In the Clarity AD patient samples, concordance with the reference method was 100% for all three *APOEε4* status (*APOEε4* noncarrier, *APOEε4* heterozygote, and *APOEε4* homozygote). Concordance by five genotypes (*APOEε2*3, ε2*4, ε3*3, ε3*4, ε4*4*) was also 100%. **Conclusion** The PrismGuide APOE Genotyping Kit enables accurate determination of *APOE* genotype without requiring complex procedures from DNA extraction to genotyping. The kit demonstrated high accuracy even in patient samples from the Clarity AD trial. If the assay kit becomes available in clinical settings in the future, it is expected to assist in shared decision-making (SDM), in which attending physicians, patients, and their families discuss the risk of ARIA and decide together on treatment methods before using anti-amyloid beta antibody drugs.
Session	Poster, 02. CLINICAL TRIALS: RESULT - P92

Sysmex Corporation
1-5-1 Wakinohama-Kaigandori, Chuo-ku, Kobe 651-0073,Japan
Tel 81-78-265-0500 Fax 81-78-265-0524