BALB/cJGpt-HSA

Strain name: BALB/cJGpt-*Alb*$^{em1Cin(hALB)}$ /Gpt
Strain Type: cas9-ki
Strain Number: T054543
Genetic Background: BALB/cJGpt

Description

Albumin (ALB) is the most abundant blood protein, accounting for 60% of the total plasma protein bank. Albumin is a highly water-soluble small globular protein with a molecular weight of 67 kDa. Albumin is composed of three domains (I, II, III), and each domain is composed of two sub domains (A, B), including 4 and 6 α Helix. Although albumin is the most abundant protein in plasma, most of albumin is not in the blood circulation, and up to 60% of albumin is stored in tissue space. Albumin has a variety of biological functions, including maintaining plasma colloid osmotic pressure, regulating body fluid distribution, participating in the binding and transport of substances, antioxidant stress, anti-inflammatory, etc. As a natural carrier protein, human serum albumin (HSA) has multiple ligand binding sites and a plasma half-life of 19 days, which makes it an attractive drug delivery carrier. Some HSA-based drugs have been approved for clinical use.[1]

The BALB/cJGpt-HSA was created at GemPharmatech using gene editing technology whereby the whole murine coding region of ALB was replaced with the human counterpart on BALB/cJGpt background. After preliminary verification, the model successfully expressed human serum albumin, which could be used for screening albumin-related drugs.

Applications

1. Screen of albumin-related drugs

Strain strategy

Fig.1 The ALB gene humanization strategy

Data support

1. Detection of ALB expression

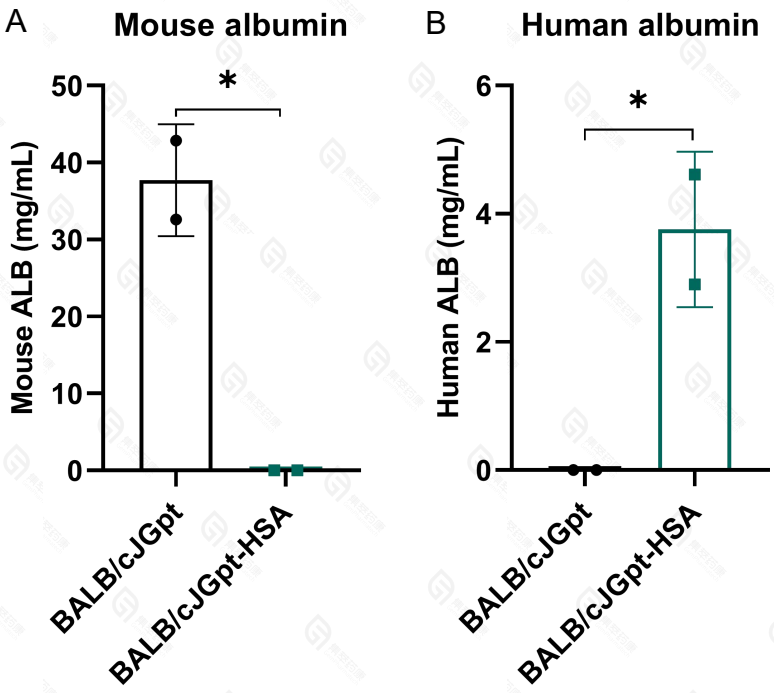

Fig.2 Detection of human ALB expression on BALB/cJGpt-HSA mice.

Serum was collected from wild type and humanized mice, and the expression of ALB was detected by ELISA. (A) Expression level of mouse ALB in serum. (B) Expression level of human ALB in serum. All data represent as MEAN ± SEM, *p < 0.05, unpaired two-tailed Student's t test.

References

1. Spada, A., et al., The Uniqueness of Albumin as a Carrier in Nanodrug Delivery. *Mol Pharm*, 2021. **18**(5): p. 1862-1894.