Supporting information

Of

Co-delivery of allergen epitope fragments and R848 inhibits food allergy by inducing tolerogenic dendritic cells and regulatory T cells

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Supplemental figures

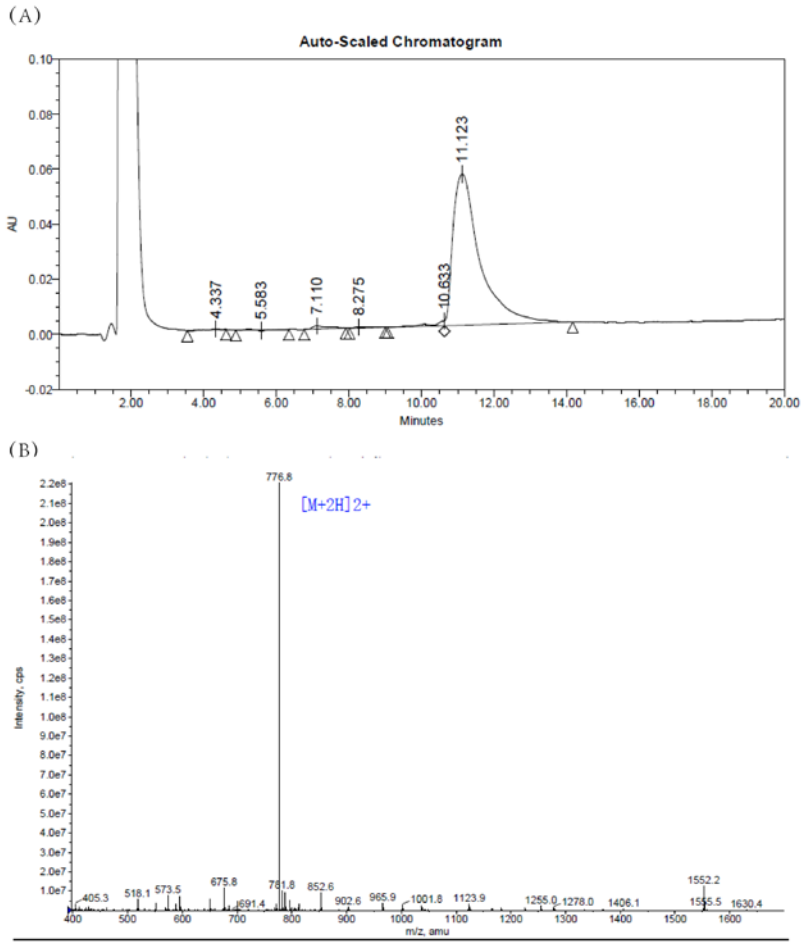

Figure S1. **Characterization of OVA epitope fragment IK (IAIMSALAMVYLGAK).**

Notes: (A) HPLC Chromatograms of IK. (B) LC-MS spectrum of IK. The molecular weight of IK is 1552 Da.

Abbreviations: OVA, ovalbumin; HPLC, high performance liquid chromatography; LC-MS, liquid chromatograph mass spectrometer.

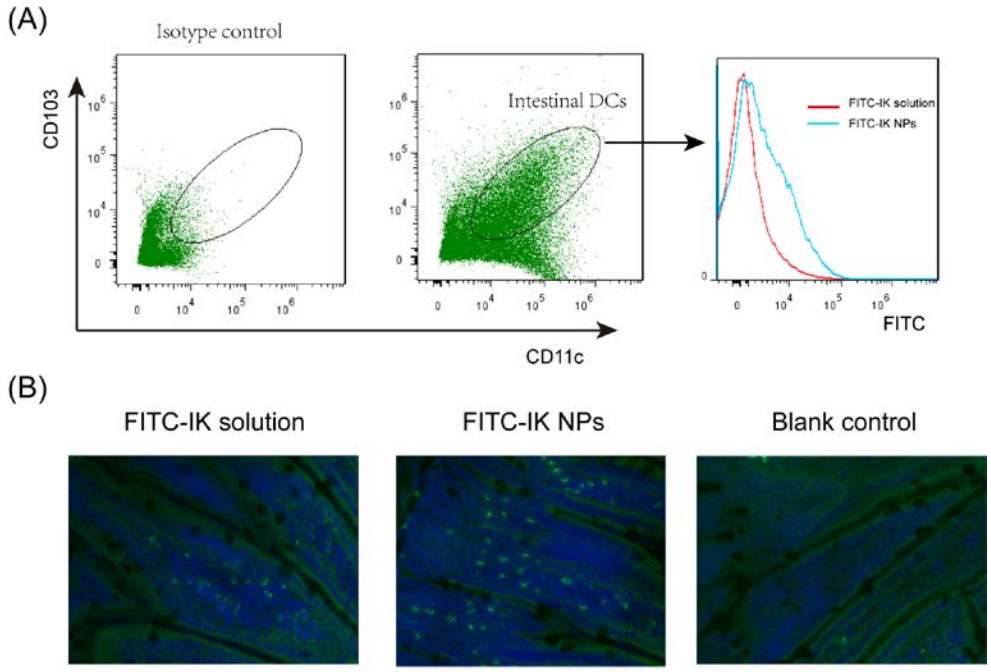

Figure S2. PPLA-IK/R848 NPs can be endocytosed by intestinal DCs in vivo.

Notes: (A) Flow analysis of intestinal DCs in mice receiving oral administration of free FITC-IK and FITC-IK NPs. The gated dot plots indicates $CD11c^{+}CD103^{+}$ intestinal DCs. (B) Fluorescence microscope analysis of small intestine samples achieved from mice received oral administration of free FITC-IK and FITC-IK NPs.

Abbreviations: PPLA-IK/R848 NPs, OVA epitope fragment IK and R848 co-delivery nanoparticles; DC, dendritic cells; FITC-IK NPs, FITC decorated IK encapsulated nanoparticles.

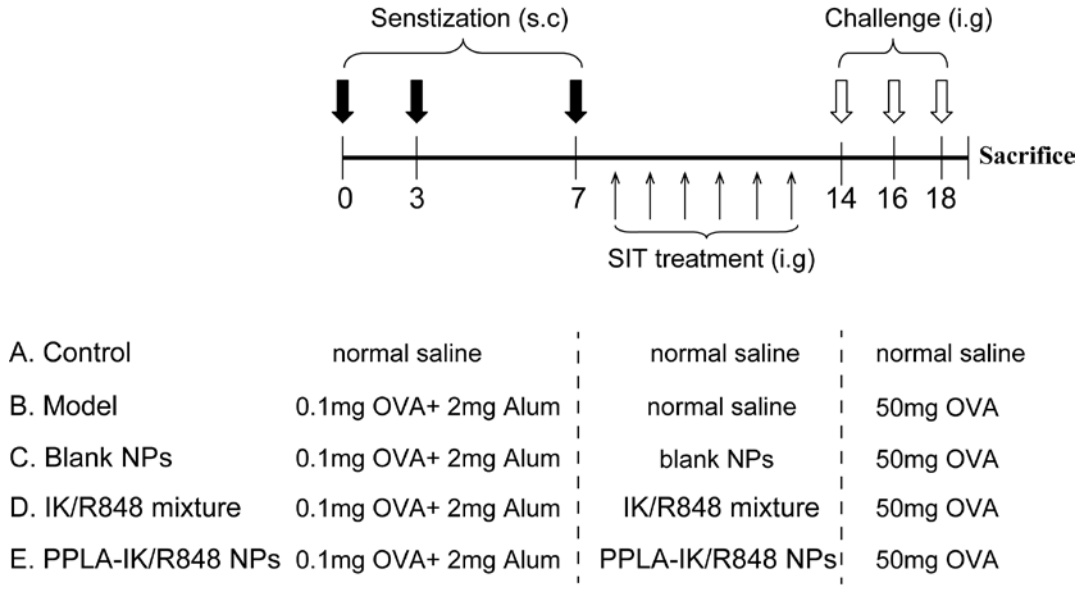

Figure S3. Protocol of sensitization, treatment and challenge in the mouse model of FA

Notes: Mice were immunized with 0.1 mg OVA per mouse in 0.2 mL normal saline plus 2 mg of Alumvia subcutaneous injection on day 0, 3 and 7. All the groups were received oral administration of normal saline, blank NPs, IK/R848 mixture and PPLA-IK/R848 NPs every day for 6 times after sensitization.Then mice were challenged by oral administration of 50 mg OVA on day 14, 16 and 18. The control group was treated with an equal volume of normal saline.

Abbreviations: OVA, ovalbumin; s.c, subcutaneous administration; i.g., intragastric administration; SIT, specific immunotherapy; PPLA-IK/R848 NPs, OVA epitope fragment IK and R848 co-delivery nanoparticles.

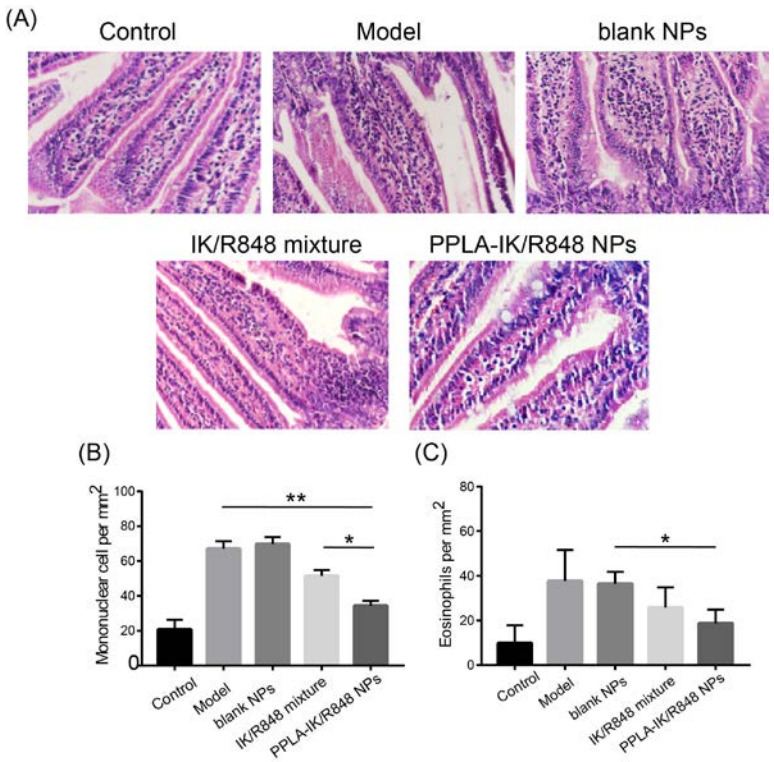

Figure S4. Histological examination of small intestine from mice in different groups

Notes: (A) Photomicrograph (×200) of small intestinal villus (HE staining). (B) Counts of mononuclear cells and (C) eosinophils in the small intestine. The data are shown as mean ± SD. (*P＜0.05, **P＜0.01).

Abbreviations: PPLA-IK/R848 NPs, OVA epitope fragment IK and R848 co-delivery nanoparticles; HE, hematoxylin- eosin staining; SD, standard deviation.

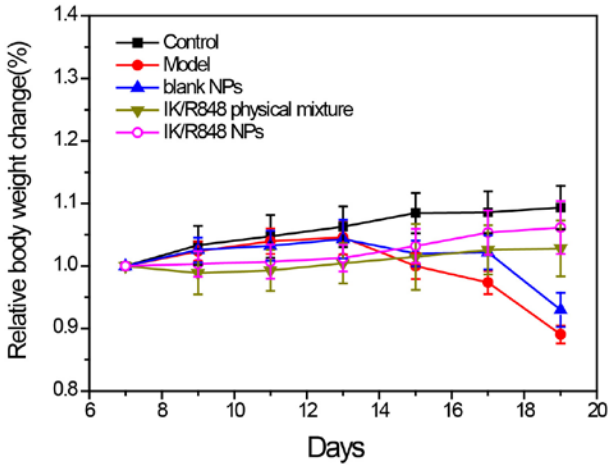

Figure S5. The relative body weight change of mice after sensitization (n=10).

Notes:. The relative body weight change of mice was monitored after the last sensitization. The data are shown as mean ± SD.

Abbreviations: PPLA-IK/R848 NPs, OVA epitope fragment IK and R848 co-delivery nanoparticles; SD, standard deviation.

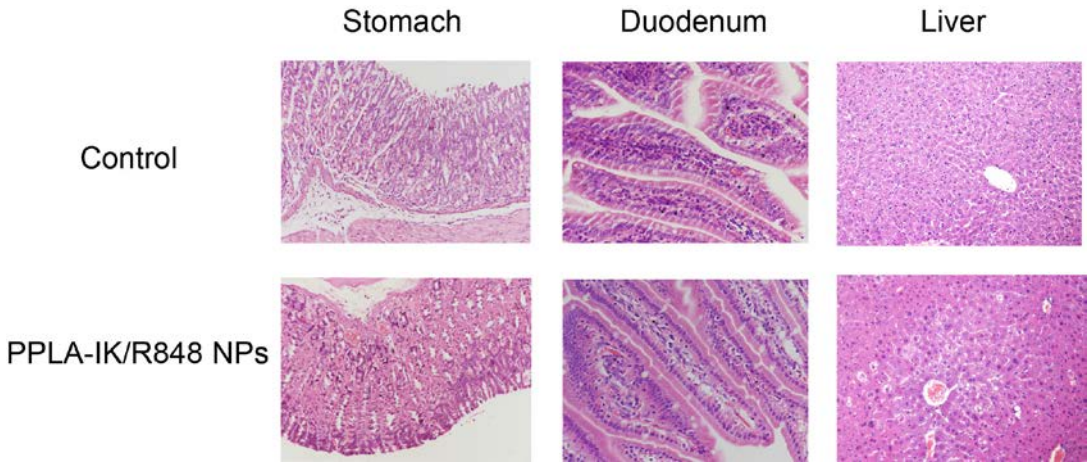

Figure S6. Photomicrographs (Original magnification 200×) of pathological sections (HE staining) from stomach, duodenum and liver.

Notes: Mice subjected to PPLA-IK/R848 NPs did not show significant pathological change in stomach, duodenum and liver (from left to right) compared with control group.

Abbreviations: PPLA-IK/R848 NPs, OVA epitope fragment IK and R848 co-delivery nanoparticles; HE, hematoxylin- eosin staining;