

# Probiotics attenuate chronic kidney disease progression in 5/6 nephrectomy mice

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## BACKGROUND & AIMS

Emerging evidence showed the important role of kidney-gut crosstalk in diverse pathological processes and alterations in intestinal barrier or dysbiotic gut microbiota have been demonstrated in chronic kidney disease (CKD).

## SUBJECTS & METHODS

CKD was induced in 6 week old C57BL/6 mouse by 5/6 nephrectomy. *Lactobacillus Rhamnosus* R0011 and *Lactobacillus Acidophilus* R0052 and proton pump inhibitor (PPI) mixture were administered via oral gavage starting 1 day after the operation and continued for 8 weeks following intestinal decontamination. PPI only without probiotic served as control. Biochemical, histological analyses as well as immunological analyses were performed at 4 weeks after 5/6 nephrectomy.

## RESULTS

At 8 weeks, serum creatinine decreased in probiotics treated group compared to CKD or sham group ( $p=0.03$ ). Probiotics group shows decreased fibrosis (Masson's trichrome staining, semiquantitative fibrosis score 17.19 Vs 12.76,  $p=0.05$ ). Urine protein creatinine ratio showed no statistical significance but we confirmed the declining trend in probiotics group ( $p=0.13$ ).

Serum IL-6 concentration ( $p=0.02$ ), as well as kidney TNF- $\alpha$ , MCP-1 ( $p<0.01$ ) concentration significantly decreased in CKD+Lacidofil group compared to CKD+PPI group. In addition, percentage of splenic Tregs and colonic Foxp3 mRNA expression level showed a significant increase in CKD+Lacidofil group ( $p<0.05$ ,  $p=0.03$ ).

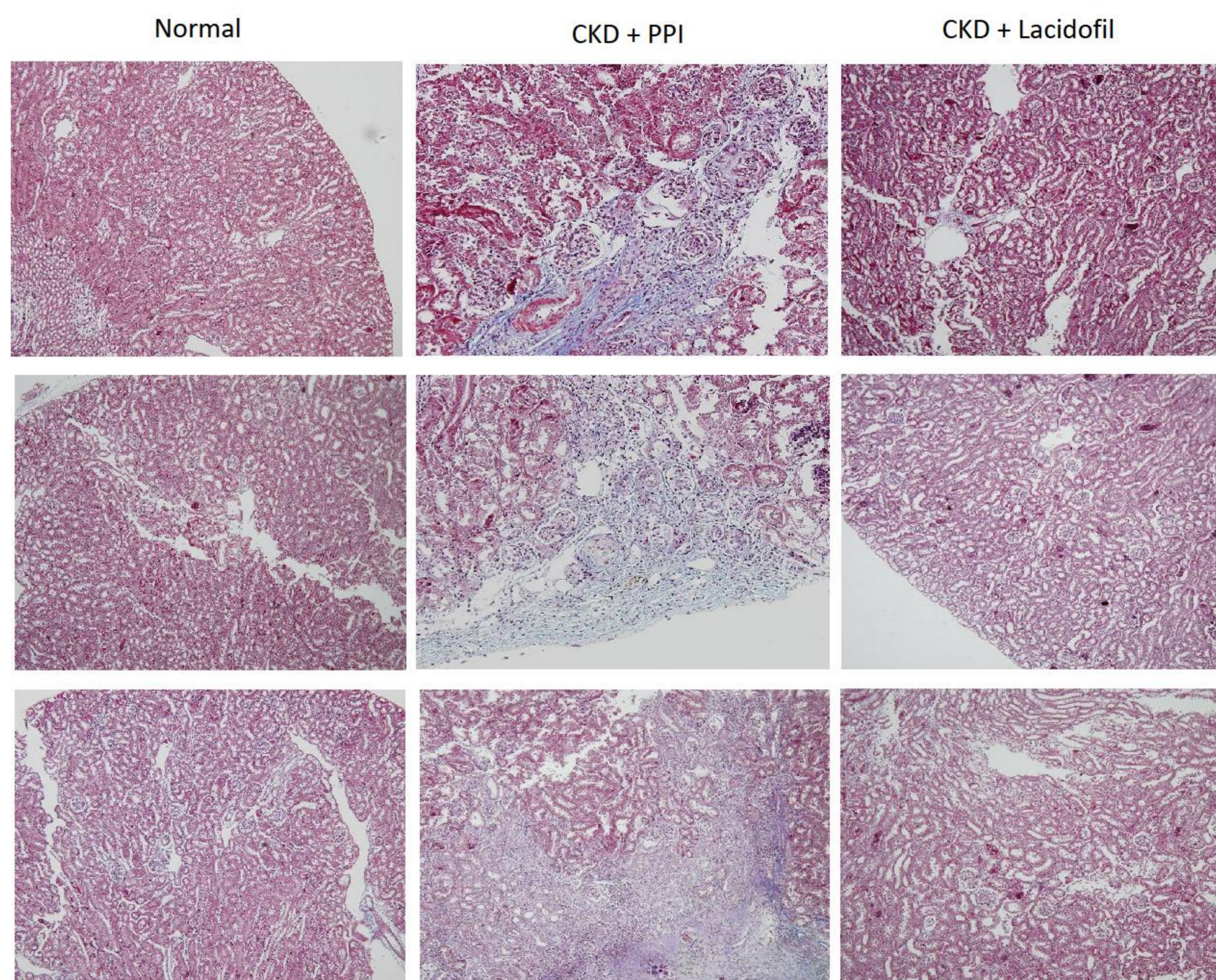
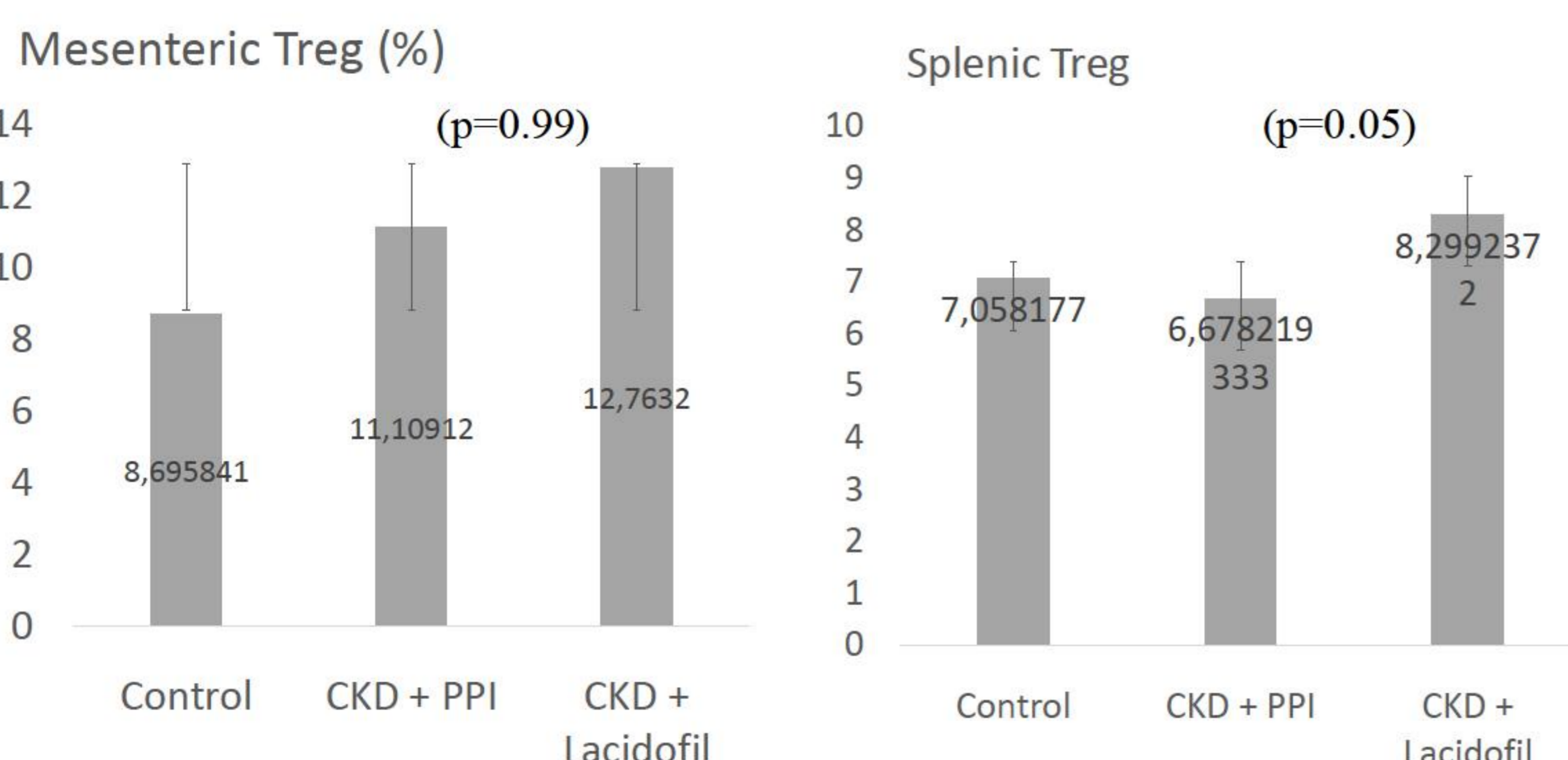
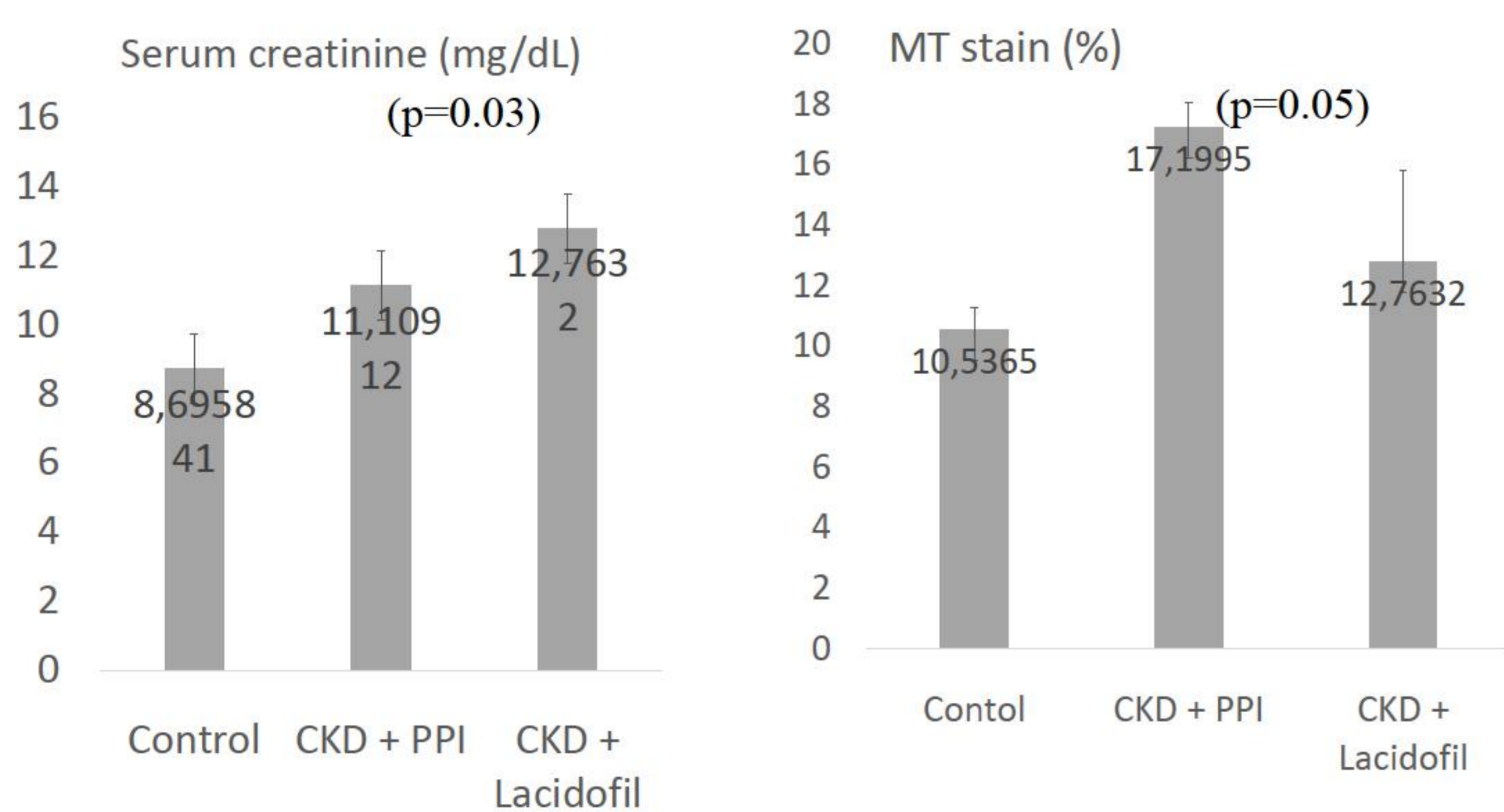
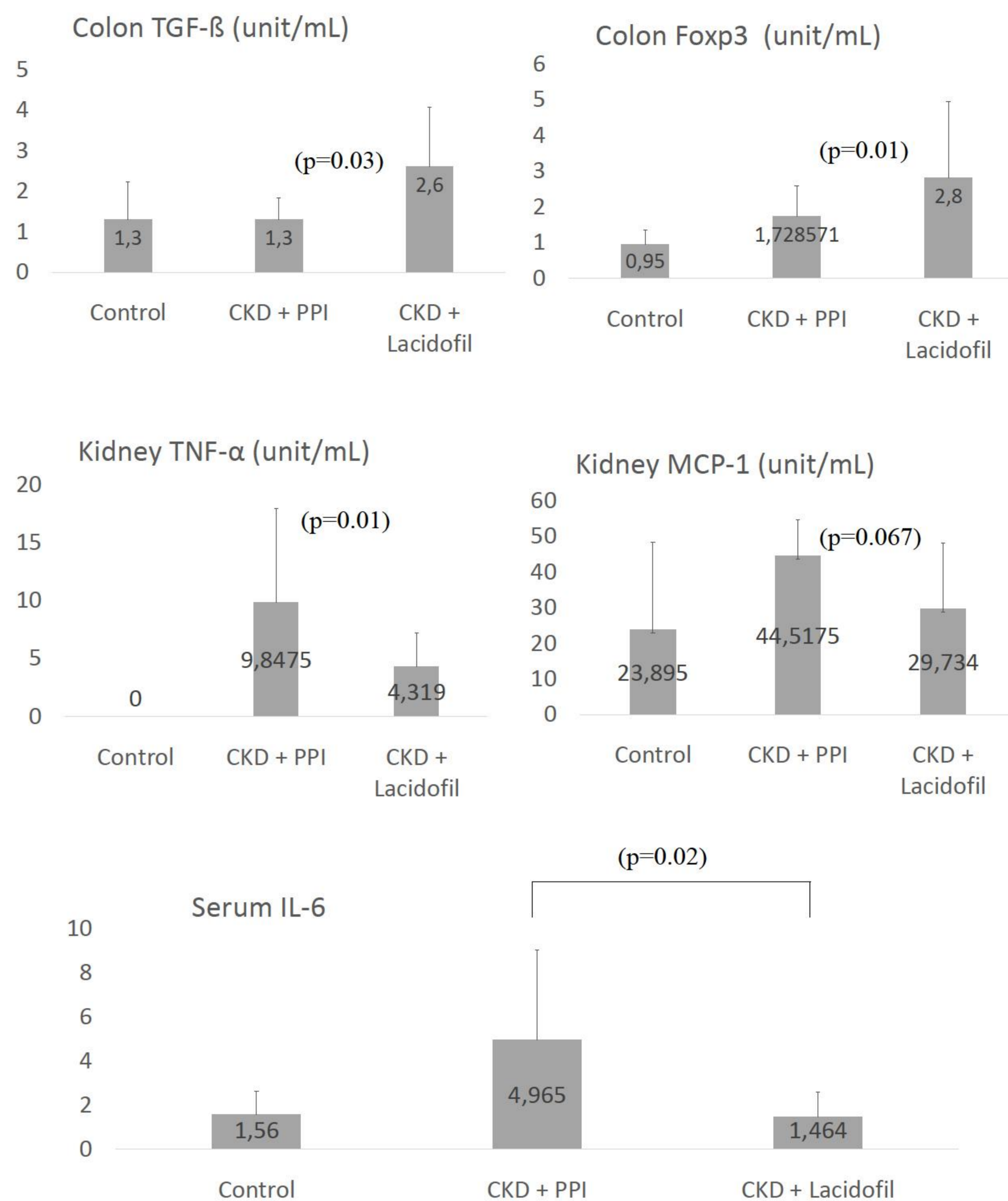


Figure 1. Pathologic findings of kidney fibrosis by MT stain at 14 weeks old 5/6 nephrectomy mice (x100)

## CONCLUSION

These data demonstrated the possibility that altered microbiota in CKD might be partially responsible for CKD associated inflammation, CKD progression and suggest that probiotic treatment might have therapeutic potential.