**Supplementary material:** the following are supplementary materials, Figure S1: The content of sIgA and 8-OHDG, Figure S2: Bacterial taxonomic analysis of intestinal bacterium from each rat in the phylum, Figure S3. Relative abundance of several microbiota in the genus.

![Figure S1](image1.png)

**Figure S1.** (a) The content of sIgA in colonic mucosa detected by ELISA; (b) The content of 8-OHDG in colonic mucosa detected by ELISA.

![Figure S2](image2.png)

**Figure S2.** Bacterial taxonomic analysis of intestinal bacterium from each rat in the phylum.
Figure S3. Relative abundance of several microbiota in the genus (those with significant difference among groups). P values were indicated as: *P<0.05, **P<0.005(* indicate versus the chow group). †P<0.05, ‡P<0.005(† indicate versus the HFD group).