One new (1, SZMT01) and one known (2) anti-aging substances were isolated from Shenzhou honey peach fruit. Their structures were elucidated by spectroscopic methods and chemical derivatization, and the result reveals that these two compounds are sesquiterpene glucosides. SZMT01 possesses a new glycosylation with an ester linkage at one terminal in an acyclic sesquiterpenoid which is the end of a double bond at another terminal. Both compounds extend the replicative lifespan of K6001 yeast strain at doses of 7.5 and 25 μM. Then, to understand the action mechanism involved, we performed an anti-oxidative experiment on SZMT01. The result revealed that treatment with SZMT01 increased the survival rate of yeast under oxidative stress. Moreover, the lifespans of *sod1* and *sod2* mutant yeast strains with a K6001 background were not affected by SZMT01. These results demonstrate that anti-oxidative stress performs important roles in anti-aging effects of SZMT01.