Purpose Aminoglycoside (AG) antibiotics are often used in routine clinical practice for the treatment of gram-negative infections. But it has remarkable nephrotoxic and ototoxic side effects due to increase in reactive oxygen radicals. This study was established to determine the possible protective effects of alpha-lipoic acid, a powerful antioxidant, on amikacin-induced nephrotoxicity. The aim of this study was to evaluate the levels of DNA damage, the novel marker ischemia modified albumin (IMA) and as well as its association with TAS, TOS Material-method Three different groups of rats (n = 6) were administered either saline (control), amikacin (1.2 g/kg, i.p.), alpha-lipoic acid (100 mg/kg, p.o.= A groups) and amikacin combination (alpha-lipoic acid 1 day before the amikacin for 5 days= ALA groups). DNA damage, the novel marker ischemia modified albumin (IMA) and as well as its association with total antioxidant status (TAS), total oxidant status (TOS) were evaluated at the end of the experiment. Serum levels of IMA, TAS, TOS were analyzed and Adj-IMA. DNA damage was evaluated by comet assay. Results The mean serum TAS, TOS and IMA levels change in the control, ALA and A (p<0.05 for IMA, TAS, and TOS one-way ANOVA). When the mean of TAS (0.69 ± 0.19), TOS (18.52 ± 3.19), IMA levels (0.45 ± 0.34) and DNA damage values (15 ± 6.5) of the Amikacin groups were compared with the mean of TAS (0.96 ±0.17), TOS (23.4±4.8), IMA (0.12±0.13), and DNA damage values (3.25 ± 1.38) of the control group and with TAS (1.24 ±0.18), TOS (14.62±1.40), IMA (0.05±0.03) and DNA damage values (11.25 ± 4.13) of the ALA group was found as statistically significant in respect of Comet Assay, TAS, TOS, and IMA (all values P < 0.01) Discussion Recent findings indicate that ALA, an antioxidant, exerts a protective role against the development of diabetic nephropathy, and the underlying mechanism may involve effective suppression of the generation of oxidants, reduction of DNA damage.