Nuclear medicine has been using radiopharmaceuticals for the diagnostic and therapeutic purposes of many diseases. Technetium-99m methoxyisobutylisonitrile (99mTc sestamibi) is a lipophilic complex that has a positive-loaded isonitril group. Aim of the study is to investigate whether 99mTc sestamibi, which is one of the mostly used radiopharmaceuticals in nuclear medicine field, causes oxidative damage or not in rats’ heart after an injection. A total of 16 male Sprague Dawley rats were randomly divided into two groups: group I:

99mTc sestamibi group, 99mTc sestamibi administered intravenously with the dose of 25MBq; group II:

control group, one dose of isotonic sodium chloride was administered intravenous with the same volume as 99mTc sestamibi group. Malondialdehyde (MDA) and total oxidant status (TOS) were used as markers of oxidative stress-induced heart impairment. Superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GSH-Px) and total antioxidant status (TAS) activities were studied to evaluate the changes in the antioxidant status. In the 99mTc sestamibi group (group I), animals treated with 99mTc sestamibi produced a significant decrease in the activities of antioxidant enzymes (SOD and CAT), while MDA level increased when compared with control group (group II) in myocardial tissue (p < 0.05). On the other hand, the GSH-Px
activities were significantly increased in the 99mTc sestamibi-treated rats compared with the untreated rats (p < 0.05). There was no significant difference in the TAS and TOS levels of plasma.