

ABSTRACT

Introduction: Cigarette smoke exposure is a source of free radicals that can lead to oxidative stress. A plant variety which potentially act as an antioxidant is broccoli (*Brassica oleracea* var. *italica*). Broccoli is a rich source of ascorbic acid, carotene and phenols. One of possible product of broccoli is broccoli juice. The objectives of this research was to evaluate the antioxidant activity of broccoli juice, using serum Malondialdehyde (MDA) level assay.

Method: This research is a true experimental laboratory research with posttest only control group design. 27 samples used were male Wistar rats and were divided into three groups which consisted of one negative control group (n = 9), one positive control group (n = 9), and one treatment group (n = 9). Animals in the negative control group are not exposed to cigarette smoke. The positive control group exposed to cigarette smoke as much as four cigarettes per day spent for one hour. The treatment group given broccoli juice at a dose of 2.5 g/kgBW and exposed to cigarette smoke as much as four cigarettes a day spent for one hour. All groups receive the treatment for 14 days.

Result: Median serum MDA level in the positive control group was 7.60 (range, 5.19-8.98), in the negative control group 4.62 (range, 3.47-7.14), and in the treatment group 3.24 (range, 2.56-11.61). After data analysis, it is known that there are significant differences from the three groups ($p = 0.029$). It was found that there was a significant difference between the positive control group and the negative control group ($p=0.007$), there was no significant difference between the positive control group and the treatment group ($p = 0.070$), and there was no significant difference between negative control group and treatment group ($p = 0.289$).

Conclusion: Despite a trend in lowering serum MDA levels, broccoli juice in this study showed insignificant effect against oxidative stress caused by cigarette smoke exposure in the laboratory animals.

Keywords : broccoli juice, malondialdehyde, cigarette smoke exposure