

## **ABSTRACT**

*Hypoxia is a condition when oxygen inside cells or tissue is in low level that causes a pathological condition. Due to insufficiency of O<sub>2</sub> molecules then it will generate free electrons which are not stable or known as free radicals. Excessive free radicals which then interacts with other molecules in the cell causes oxidative damage to tissue , protein dysfunction , and is involved in many diseases such as cardiovascular disease, neuronal degeneration, cancer and have an impact on the body's aging process. in order to prevent various damage that caused by the influence of oxidative stress, takes antioxidants. Cranberry (*Vaccinium macrocarpon* Aiton) has a high content of antioxidants. The study aimed to determine the effect of cranberry fruit extract on MDA levels in the heart of Sprague-Dawley rats after hypoxia induction. Phytochemical (Harborne) test, antioxidant capacity test (Blois), total alkaloids content test (Trivedi et a.l), total phenolic content test (Singleton and Rossi), toxicity test (Meyer), were performed, and MDA levels were measured. Rats were divided into two groups which were not suffocated group and suffocated group, each was divided into four subgroups which were normoxia, 1 day hypoxia, 7 days hypoxia, and 14 days hypoxia. Histopathologic examination was performed by HE staining. Phytochemical test obtained positive results in the tests of alkaloids, anthocyanins and betacyanin, cardio glycosides, coumarins, flavonoids, glycosides, phenols, quinones, steroids, terpenoids, and tannins; total antioxidant capacity test IC<sub>50</sub> = 49,760 ppm; total phenolic level = 343,444 µg/mL; total alkaloid levels = 66,118 µg/mL; toxicity test LC<sub>50</sub> = 15,081 µg/mL. On the measurement of MDA levels showed an increased MDA levels in the heart and rats blood based on duration of hypoxia treatment. Suffocated group had lower levels of MDA. Cranberries have antioxidant.*

*Keyword: MDA, heart, cranberry, stress oxidative, antioxidant*

## ABSTRAK

Hipoksia merupakan kondisi rendahnya kadar O<sub>2</sub> yang terdapat dalam sel atau jaringan hingga menyebabkan keadaan patologis. Akibat tidak tercukupinya molekul O<sub>2</sub> maka akan menghasilkan elektron-elektron bebas yang bersifat tidak stabil atau dikenal sebagai radikal bebas. Radikal bebas yang berlebihan ini kemudian berinteraksi dengan molekul lain di dalam sel dan menyebabkan kerusakan oksidatif pada jaringan, disfungsi protein, dan terlibat dalam banyak penyakit seperti penyakit kardiovaskular, degenerasi neuronal, kanker dan berdampak pada proses penuaan tubuh. Untuk mencegah berbagai kerusakan yang disebabkan oleh pengaruh stres oksidatif dibutuhkan antioksidan. Kranberi (*Vaccinium macrocarpon* Aiton) memiliki kandungan antioksidan yang tinggi. Penelitian ditujukan untuk mengetahui pengaruh pemberian ekstrak buah kranberi terhadap kadar MDA jantung tikus *Sprague-Dawley* setelah diinduksi hipoksia. Dilakukan uji fitokimia (Harborne), uji kapasitas antioksidan (Blois), penentuan kadar alkaloid total (Trivedi *et al*), penentuan kadar fenolik total (Singleton dan Rossi), uji toksisitas (Meyer), serta dilakukan pengukuran kadar MDA. Tikus dibagi dua kelompok, kelompok tidak cekok dan kelompok cekok, yang masing-masing dibagi empat subgroup yaitu normoksia, hipoksia 1 hari, hipoksia 7 hari dan hipoksia 14 hari. Pemeriksaan histopatologi dilakukan dengan pewarnaan HE. Hasil uji fitokimia didapatkan hasil positif pada uji alkaloid, *anthocyanin* dan *betacyanin*, *cardio glycosides*, *coumarins*, *flavonoids*, *glycosides*, *phenols*, *quinones*, *steroids*, *terpenoids*, dan *tannin*; uji kapasitas total antioksidan IC<sub>50</sub> = 49,760 ppm; kadar fenolik total = 343,444 µg/mL; kadar alkaloid total = 66,118 µg/mL; uji toksisitas LC<sub>50</sub> = 15,081 µg/mL. Pada pengukuran kadar MDA menunjukkan peningkatan kadar MDA Jantung dan darah tikus sesuai dengan lamanya perlakuan hipoksia. Kelompok cekok memiliki hasil kadar MDA lebih rendah. Buah kranberi memiliki aktivitas antioksidan.

Kata Kunci: *MDA, jantung, kranberi, stress oksidatif, antioksidan*