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Inhibition of LPS-stimulated NO production in mouse macrophage-like cells by Barbados cherry, a fruit of *Malpighia emarginata* DC.

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The extract of Barbados cherry (acerola fruit) has been reported to display diverse biological activities such as prevention of age-related diseases. We investigated here the possible effect of Barbados cherry extract on nitric oxide (NO) production by activated macrophages. Barbados cherry was roughly separated into 4 or 5 fractions by two different methods, using various organic solvents such as hexane, acetone, methanol (70% and 100%) and water, and assayed for its ability to inhibit NO production by lipopolysaccharide (LPS)-stimulated mouse macrophage-like Raw 264.7 cells. Among these fractions, AcOEt extracts [AE0] in Method I and acetone extract [A0] in Method II showed the highest inhibitory activity of NO production (SI > 20 and SI = 31, respectively). When these fractions were subjected to silica gel column chromatography, higher inhibitory activity for NO production was concentrated in AcOEt [AE6] (SI = 64) and benzene-AcOEt (1:4) [A10] fractions (SI > 59). Western blot analysis demonstrated that AE6 and A10 fractions reduced the intracellular concentration of inducible NO synthase (iNOS) by approximately one-third. ESR spectroscopy showed that these fractions scavenged various radical species such as superoxide anion (O₂⁻) and NO radicals. These data suggest that the inhibitory effect on NO production by Barbados cherry extracts is partly due to the inhibition of iNOS expression, and scavenging of O₂⁻ and NO radicals.