Proposed solution to problem O689

*Prove that* $5/2$ *is the minimum positive value of the constant* $k$ *such that*

$$\sqrt{\frac{b+c}{ka+b+c}}+\sqrt{\frac{c+a}{kb+c+a}}+\sqrt{\frac{a+b}{kc+a+b}}\geq 3\sqrt{\frac{2}{k+2}}$$

*holds for any nonnegative real numbers* $a, b, c$ *with* $a+b+c>0$.