

**OXALIC ACID FROM *Averrhoa bilimbi* AS AN ALTERNATIVE
BLEACHING STAIN REMOVER**

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ABSTRACT

OXALIC ACID FROM *Averrhoa bilimbi* AS AN ALTERNATIVE BLEACHING STAIN REMOVER

Nowadays, we cannot stop getting stains on our fabric due to our daily activities such as cooking, eating, teaching, and working. The common stain we get are lead pencils, eye makeup, tomato sauce, mud, and tea. Therefore, many commercialized products, such as Clorox, remove this stain. Clorox is a well-known stain remover in our country. Sodium hypochlorite is the primary solution in this bleaching. However, this solution is toxic and will produce chlorine gas that causes many harmful effects on our health and environment. Therefore, oxalic acid was used as an alternative to removing the stain, as it is known as a bleaching and chelating agent. In this study, the concentration of oxalic acid in *Averrhoa bilimbi* fruits and leaves was determined using high-performance liquid chromatography-ultraviolet (HPLC-UV). This study also aims to formulate *A. bilimbi* fruits and leaves extract as bleaching stain remover with the addition of sodium hypochlorite and to evaluate the extract's effectiveness with the commercialized stain remover through a visibility test. The fruits contain a higher concentration of oxalic acid than leaves with a concentration of 294.20 ± 47.35 ppm for fruits and 239.81 ± 60.50 ppm for leaves. The results showed that the preferred formulation is F3 and L3, which contain a 1:1 fruit or leaf extract ratio and sodium hypochlorite. Hence, 50% of fruit or leaf extract manages to remove many types of stains, such as lead pencils, tomato sauce, eye makeup, and tea, in 10 minutes. pH test also showed that the pH of this formulation is lower than a commercialized stain remover which is 10.90 for F3 and 10.91 for L3, while the pH for commercialized stain remover is 11.86. Hence, it is proven that both fruits and leaves extract of *A. bilimbi* can be used as an alternative stain remover.

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