

## ABSTRAK

Popok bayi modern biasanya menggunakan super absorben polimer (SAP) sebagai lapisan penyerap utama. Namun material SAP yang umum digunakan saat ini cenderung sintesis, imitasi dan kurang ramah lingkungan. Popok bayi juga bisa menimbulkan ruam pada kulit bayi. Ruam popok merupakan kelainan kulit yang timbul akibat adanya radang di bagian tubuh yang tertutup diaper. World Health Organization (WHO) pada tahun 2012 menyatakan bahwa 25% dari 6.840.507.000 bayi di dunia menderita ruam popok akibat penggunaan popok bayi. Oleh karena itu diperlukan solusi untuk mengatasi masalah limbah popok bayi dengan membuat SAP antibakteri dari limbah ampas tebu dan daun sirih. Tujuan penelitian ini adalah untuk mengetahui pengaruh konsentrasi daun sirih (*Piper Betle L.*) pada super absorben polimer (SAP) terhadap bakteri *Staphylococcus aureus*. Pembuatan SAP diawali dengan isolasi selulosa dari ampas tebu dan dihitung kadar selulosanya. SAP diperoleh dengan cara Iradiasi sinar UV. SAP yang dihasilkan dilakukan uji Spektrum FTIR, uji rasio swelling, uji ketahanan penyimpanan air, dan uji grafting. Pengujian antibakteri dilakukan dengan metode sumuran, dengan cara merendam SAP ke dalam ekstrak daun sirih dengan konsentrasi 0%, 5%, 10%, 20% dan 50%. Dari hasil perhitungan, ampas tebu memiliki kadar selulosa sebesar 50%. Hasil spektrum FTIR menunjukkan adanya gugus -NH<sub>2</sub>, -CH, dan -C=O pada SAP, karakteristik rasio swelling sebesar 4026%, rasio penyusutan setelah 14 hari, fraksi grafting sebesar 15,77%, dan SAP rendaman larutan daun sirih 50% efektif menghambat pertumbuhan bakteri *Staphylococcus aureus* dengan diameter zona hambat sebesar 5,38 mm.

**Kata Kunci:** SAP, popok bayi, ampas tebu, antibakteri, daun sirih

## ABSTRACT

Modern baby diapers usually use super absorbent polymer (SAP) as the primary absorbent layer. However, the SAP materials commonly used today tend to be synthetic, imitation and less environmentally friendly. Baby diapers can also cause rashes on the baby's skin. Diaper rash is a skin disorder that occurs due to inflammation in the parts of the body covered by diapers. The World Health Organization (WHO) stated in 2012 that 25% of the 6,840,507,000 babies in the world suffer from diaper rash due to using baby diapers. Therefore, a solution is needed to overcome the problem of baby diaper waste by making an antibacterial SAP from sugarcane bagasse and betel leaf waste. The aim of this research was to find out the effect of the concentration of betel leaves (*Piper Betle L.*) on the super absorbent polymer (SAP) on *Staphylococcus aureus* bacteria. SAP production began with isolating cellulose from sugarcane bagasse and calculating the cellulose content. SAP is obtained by UV light irradiation. The resulting SAP was subjected to an FTIR spectrum test, swelling ratio test, water storage resistance test, and grafting test. Antibacterial testing was carried out using the well method by soaking SAP in betel leaf extract with concentrations of 0%, 5%, 10%, 20% and 50%. From the calculation results, sugar cane bagasse has a cellulose content of 50%. FTIR spectrum results show the presence of -NH<sub>2</sub>, -CH, and -C=O groups in SAP, characteristic swelling ratio of 4026%, shrinkage ratio after 14 days, grafting fraction of 15.77%, and SAP soaked in betel leaf solution is 50% effective in inhibiting the growth of *Staphylococcus aureus* bacteria with an inhibition zone diameter of 5.38 mm.

**Keywords:** SAP, baby diapers, sugarcane bagasse, antibacterial, betel leaves