

Potensi Membran Cangkang Kulit Telur Ayam (*Gallus gallus*) sebagai Media Filtrasi Air Minum

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ABSTRAK

Telur merupakan salah satu bahan makanan yang sering dikonsumsi oleh masyarakat, hal ini membuat banyaknya limbah cangkang telur menumpuk. Dikarenakan limbah cangkang telur merupakan salah satu limbah yang belum dimanfaatkan secara maksimal, salah satu cara yang dapat dilakukan untuk mengurangi limbah tersebut adalah dengan memanfaatkannya menjadi membran ultrafiltrasi yang memiliki harga lebih ekonomis daripada filter pada umumnya. Membran cangkang telur memiliki sifat *semi-permeable* dan anti-bakterial yang memungkinkan molekul atau ion tertentu melewatinya, sehingga memiliki potensi sebagai media filtrasi air minum. Penelitian ini terdiri dari 3 tahap, penelitian tahap 1 berupa pembuatan membran filtrasi cangkang telur menggunakan asam encer, uji keregangan membran filtrasi yang menunjukkan bahwa rata-rata keregangan sebesar 0,3 cm, dan uji ketahanan membran filtrasi terhadap rendaman air dapat bertahan selama 3 hari. Penelitian tahap 2 berupa perbandingan proses filtrasi menggunakan membran cangkang telur, hepa filter dan pure it yang hasilnya tidak berbeda secara signifikan sehingga dapat dikatakan membran cangkang telur efektif digunakan sebagai filter air. Penelitian tahap 3 didapatkan dari hasil pengujian kadar pH, pengujian bakteri coliform dan uji Spektrofotometer UV-VIS yang membuktikan bahwa membran filtrasi dari cangkang telur menghasilkan air yang layak diminum. Oleh karena itu membran cangkang sel telur ayam memiliki potensi dan manfaat sebagai media filtrasi air minum yang ekonomis dan ramah lingkungan.

Kata kunci: Membran filtrasi air minum, membran cangkang kulit telur, kualitas air minum

ABSTRACT

Egg is one of the food sources which has been widely consumed by people. This could therefore lead to a massive production of egg shell waste. As egg shell waste has not been extensively utilized, one of the methods to maximize the potential use of the waste is to converting it into ultrafiltration membrane which is more economical compared to other common regular filter method. The egg shell membrane has semi-permeable and anti-bacterial properties which allow any specific molecules or ions to pass through it which then could be potentially used as a water filtration medium. The research was executed in three stages. The first stage was the production of the egg shell membrane using a dilute acid, strain test of the membrane which showed that the average elongation was 0,3 cm, and resistance test of the filtration membrane against water immersion which indicated that it could last in three days. Next, the second stage of the research was a filtration comparison test between the egg shell membrane, hepa filter, and pure it which the result showed that there was no significant difference. Hence, it could be argued that the egg shell membrane is effective to be used as a water filter. Finally, the third stage of the research was consisted of pH level test, coliform bacteria test, and UV-VIS Spectrophotometer test. From the obtained result, it showed that the egg shell filtration membrane could produce a safe drinking water quality. Consequently, it can be concluded from the research that the egg shell membrane has a potential use and benefit as a drinking water filtration medium which are affordable and eco-friendly.

Key words: Drinking water filtration membrane, egg shell membrane, drinking water quality