TANGENTIAL FLOW FILTRATION OF SPORES SUSPENSION

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Introduction. Currently bioinsecticides production is booming. Most of them are based on spore production which have to be harvested. The tangential centrifugation and filtration operations are recommended to concentrate these suspensions and offer a better product (1). Tangential microfiltration and ultrafiltration was used to concentrate the suspension of spores of *Beauveria bassiana*. This paper studies these unit operations and scaling.

Methods. Be used microfiltration cartridges of 0.1 microns pore diameter and ultrafiltration cartridges 100 kDa, both with a membrane area of 0.042 m^2. The micro and ultrafiltration at laboratory consist concentrate one liter of fermentation broth with *Beauveria bassiana* spores to a final volume of 0.1 L. (2). It will work a transmembrane pressure of 175 psi, feed flow 18 $x10^{-6}$ m^3/s, pH of 6.0 and temperature of 25 ° C. For scaling derived an equation that will allow us to determine the flow of power with which to work on the pilot team using as criteria the polarizing gel model.

Results. The flux of both cartridges is practically the same being the average value of $7x10^{-6}$ m/s. The concentration factor achieved was 10. The results can be seen in Fig. 1

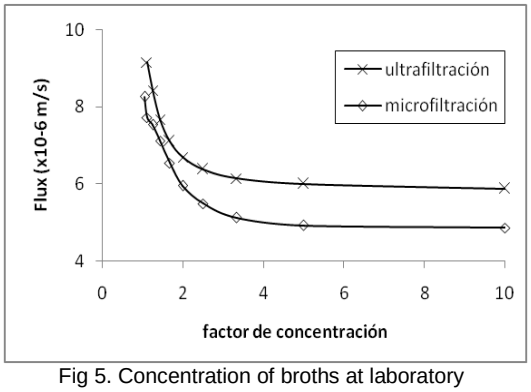

Fig 5. Concentration of broths at laboratory

Of these operations is chosen for scaling ultrafiltration. Using equation 1 for scaling and across a range of conditions yields equation 2, and from the latter we can estimate the feed flow to the pilot team work which resulted in 4.3 $x10^{-4}$ m^3/s.

$$J = k \ \ln \frac{C_G}{C_B} \qquad (1)$$

$$v2 = \left(\frac{v1}{dh_1 L_1} \right) (dh_2 L_2) \qquad (2)$$

25 liters of processed suspension obtained 22.5 L of filtrate and 2.5 L of concentrate. With these results it obtains a average flux of 8 $x10^{-6}$ m/s, which in practical terms is of the same order that the laboratory results. The results can be seen in Fig. 2.

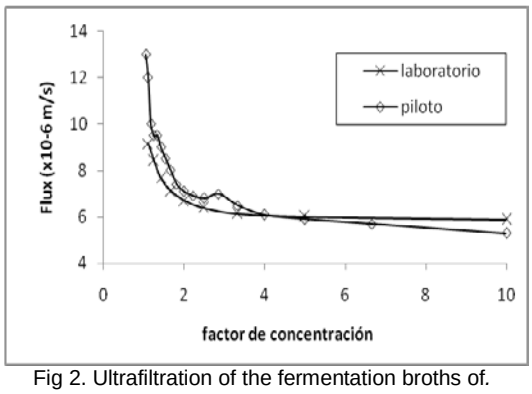

Fig 2. Ultrafiltration of the fermentation broths of. *Beauveria bassiana*

Conclusions. To concentrate is equivalent spore suspensions for micro do that by ultrafiltration, the latter is recommended because no embedded particles and therefore is easier to clean. When you get the same value of flux in ultrafiltration laboratory and pilot shows that the criterion used is appropriate scaling.

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