

ABSTRACT

Xanthan gum production by *Xanthomonas campestris* pv. *campestris*. Utilising Molasses as the Substrate

In this study the use of molasses as a substrate for *Xanthomonas campestris* pv. *campestris* in the production of xanthan gum via shake flask culture was examined. The maximum xanthan yield (4.83g/kg of molasses solution) in shake flask culture was obtained using Jamaican molasses solutions containing two percent total sugars. It was established that the maximum production of the xanthan gum occurred by the third day of incubation. A comparison was made between molasses and other commonly used substrates for the production of xanthan gum. Molasses gave higher yields than all three substrates with which it was compared. The xanthan yield increased three fold with the addition of 4.7 mM citric acid to the molasses solution.

The parameters affecting xanthan production in molasses were established using the type strain of *X. campestris*. Further work was done in which 33 local isolates were screened for their xanthan production in a molasses substrate. The characterisation of indigenous isolates of *X. campestris* showed that while there was variation in the local isolates in regards to acidification of carbohydrates, intrinsic antibiotic resistance patterns, plasmid profile and pathogenicity, these isolates are capable of producing xanthan from molasses.

The xanthan production of the local isolates compared favourably to that of the type strain. From this study, some local *Xanthomonas* isolates have been recommended for xanthan production after their microbiological and biochemical characterisation.