EFFECT OF CARBON, NITROGEN AND SALT SOURCES ON THE GROWTH OF *Monascus purpureus* IN QUINOA (*Chenopodium quinoa*) BASED CULTURE MEDIA.

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INTRODUCTION

Monascus is capable of producing different secondary metabolites, such as pigments, monacolin K, and a variety of digestive enzymes. These metabolites show antimicrobial, anti-inflammatory, antimutagenic and cholesterol-lowering activities; yet, to study such metabolites, it is necessary to evaluate the growth of the fungus as it is a key indicator. The present study was carried out to evaluate the effect of different sources in quinoa flour-based culture media during the growth of *M. purpureus*.

METHODS

The diameter was evaluated daily until the tenth day and then the increase in radial growth was determined and used to calculate the growth rate (mm/day) by linear regression. The sources were: glucose, fructose, molasses, fish hydrolysate, fermented fish, monosodium glutamate and sodium chloride; at concentrations of 0.5 and 1% (w/v) with variation of pH 5, 6 and 7.

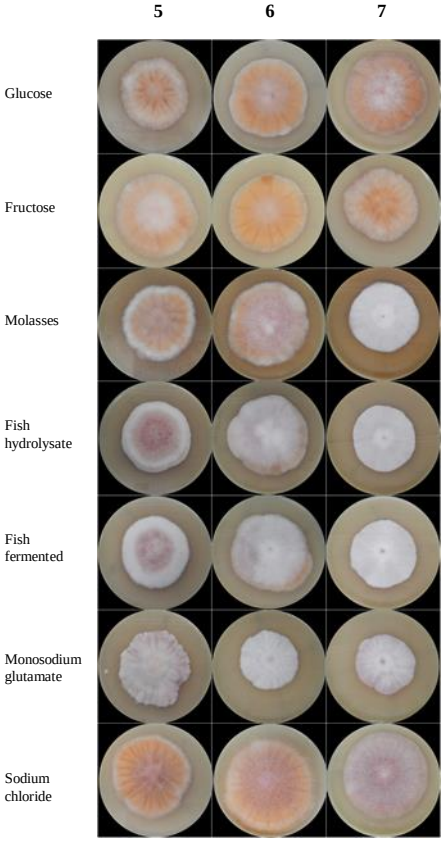

Figure 1. Mycelial development of *Monascus purpureus* in culture media based on quinoa flour supplemented with different sources of carbon, nitrogen and salts at 0.5% (w/v), at 3 pH levels (5, 6 and 7) at the 10th day.

RESULTS

To compare the data, a completely randomized statistical design was used with a 7x2x3 factorial arrangement with three replications. The analysis was done by ANOVA, and to determine significant differences between the means the Tukey test was applied ($\alpha = 0.05$). At the tenth day, the highest value obtained was 72.59 mm with a radial growth rate of 3.629 mm/day, corresponding to the effect of 0.5% (w/v) sodium chloride at pH 6, and the lowest value was 42.05 mm with a radial growth rate of 2.10 mm/day for the effect of 0.5% (w/v) monosodium glutamate at pH 7.

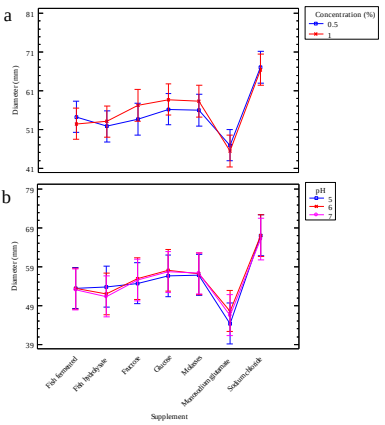

Figure 2. The figure shows, (a) the interactions of supplement and substrate concentration in percentages; (b) the interaction of supplement and pH on the diametric growth of the fungus in vitro.

CONCLUSION

From this research, it is deduced that different sources have effects on the development of *M. purpureus*, and factors such as pH and concentration can also make changes in the morphology of the colonies affecting their growth rate.

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