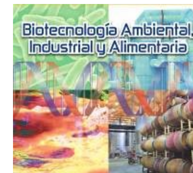
Poster



Optimization of a new protocol that allows speeding up the process of screening genes and candidate drugs for Spinal Muscular Atrophy in C. elegans

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ABSTRACT

Spinal Muscular Atrophy (SMA) is a rare genetic disease that affects 1 in 8,000 people. It is caused by a recessive mutation in the SMN1 gene, which produces the SMN protein and is highly conserved in invertebrates [1]. In humans, the SMN2 gene is also found, which differs by 5 nucleotides from SMN1, which means that only 10% of the translated proteins are complete [2]. For the study of SMA, a strain of C. elegans, developed by our group, is used, which presents the smn1 gene fused to the mCherry fluorescence marker, in such a way that it allows measuring the expression of SMN in response to different candidates (drugs and RNAi) through fluorescence. These candidates have been chosen by using the ASACO bioinfomatic tool, which makes it possible to generate an expression profile opposite to SMN1. However, normally, to measure fluorescence, a confocal microscope is used, which slows down this procedure considerably and makes it difficult to carry out large screenings of candidates. For this reason, in this work a new method has been sought to measure fluorescence in a faster way and that, like the confocal method, gives reliable results. For this, tests have been carried out with two pieces of equipment: the Apotome microscope and a fluorimeter, and candidates were used, both drugs and RNAi, which had been confirmed by confocal microscopy as capable of increasing SMN levels. In this way, tests were carried out with both teams to see which of the two provides results of fluorescence levels more similar to the confocal one. The results show the fluorimeter as the most appropriate equipment for this task, since, in addition to presenting very similar results to the confocal microscope, it is a faster method that allows for large scrutinies of candidates. In the future, using the ASACO tool, new candidate genes and drugs will be selected and fluorescence levels will be measured using this new method.

REFERENCES

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