

Introduction

The tree tomato, tamarillo or Andean tomato (*Solanum betaceum* Cav) is a fruit native to the South American region, typical of Peru, Argentina, Colombia, Ecuador and Bolivia.

The tree tomato fruit is a bright red-brown ovoid berry with a thin skin. Removing the peel of the fruit is the mesocarp or pulp, this part is juicy and fleshy and inside is the seed-jelly that contains the seeds. It is generally consumed in juices, salads, desserts and jams, providing flavor and aroma, in addition, it has a high content of bioactive compounds.

The crop is resistant to different kind of pests; however, it is attacked by the root knot nematodes (*Meloidogyne incognita*) (1). Actually, in Ecuador are available tree tomato crops of ecotype "anaranjado gigante" and "morado gigante" with rootstock in *Nicotiana glauca* (tree tobacco). It is known that grafting causes changes in the concentration of bioactive compounds, which has been observed in different plant species (2, 3). However, there is no evidence of the changes in relation to the secondary metabolites caused by grafts in the tree tomato crop and there is no evidence regarding the pharmacological benefits that the fruit could possess., such as antimicrobial activity, antidiabetic activity or anti-inflammatory activity. The objective of the study is determinate the physicochemical, functional and bioactivity characteristics of two tree tomato ecotypes, graft and control (*Solanum betaceum* Cav.) to different degree of maturity

Caracterización físico-química, funcional y pruebas de bioactividad de dos ecotipos de tomate de árbol injerto y control (*Solanum betaceum* Cav.) a diferente índice de madurez

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Methodology



Figure 1. Study of floral evolution: a) buttons, b) open flowers, c) fruit set and d) fruit

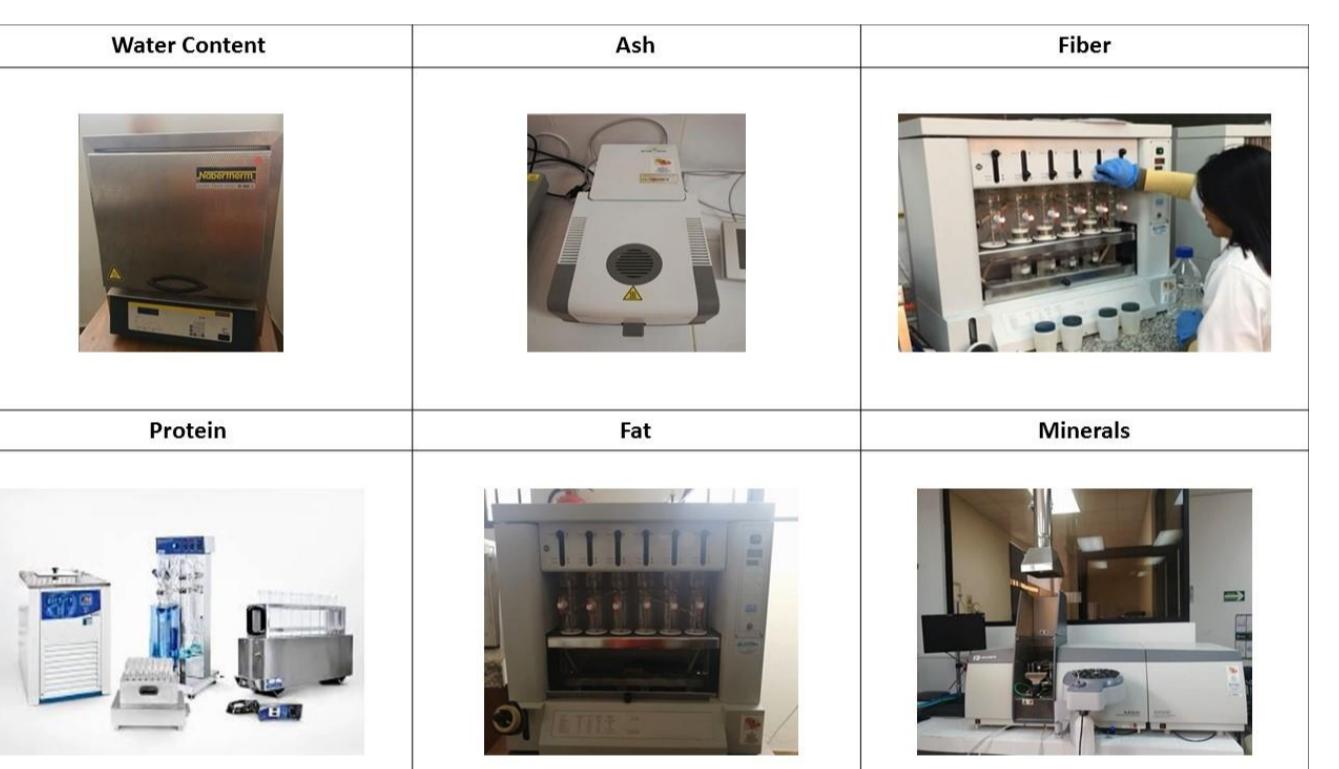


Figure 2. Physicochemical characteristics in fruit

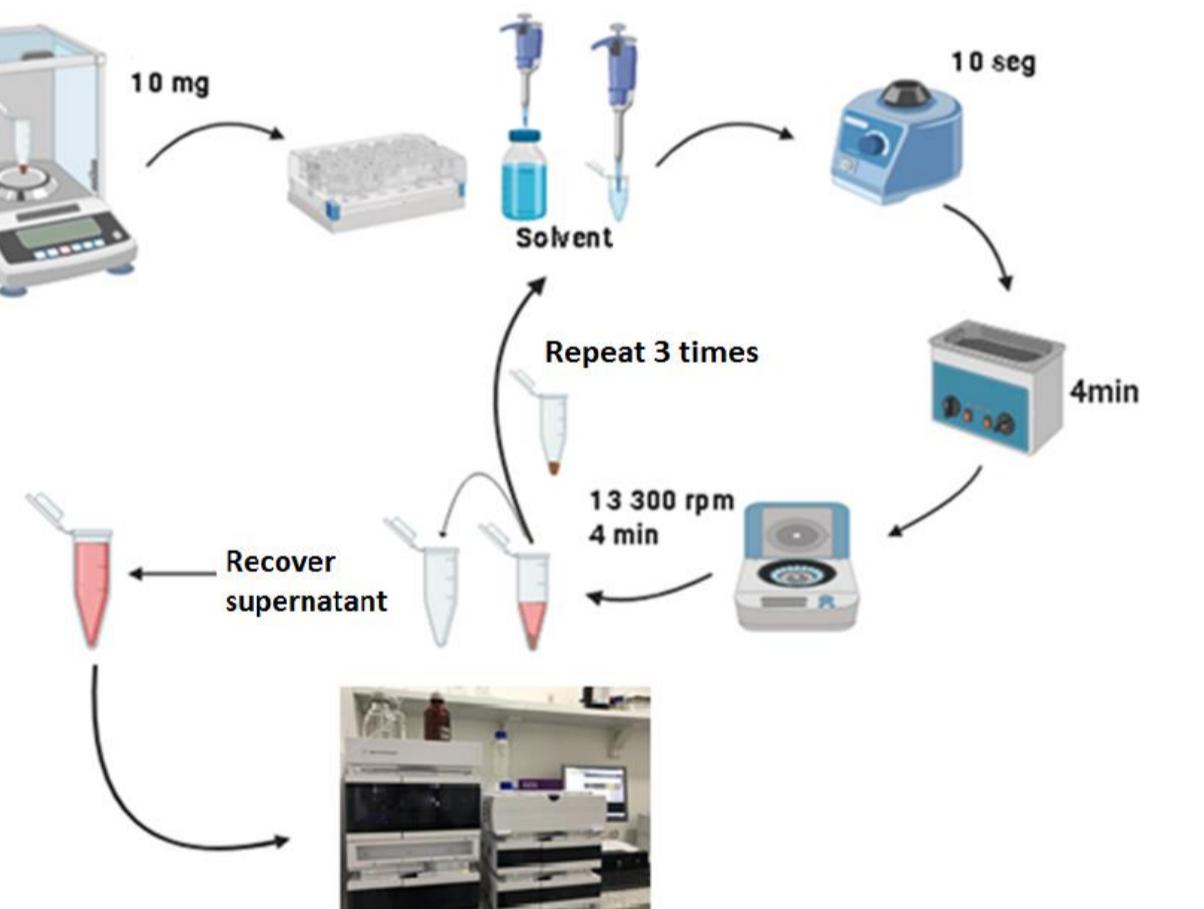


Figure 3. Determination of the carotenoids profile of, phenolic compounds and glycoalkaloids

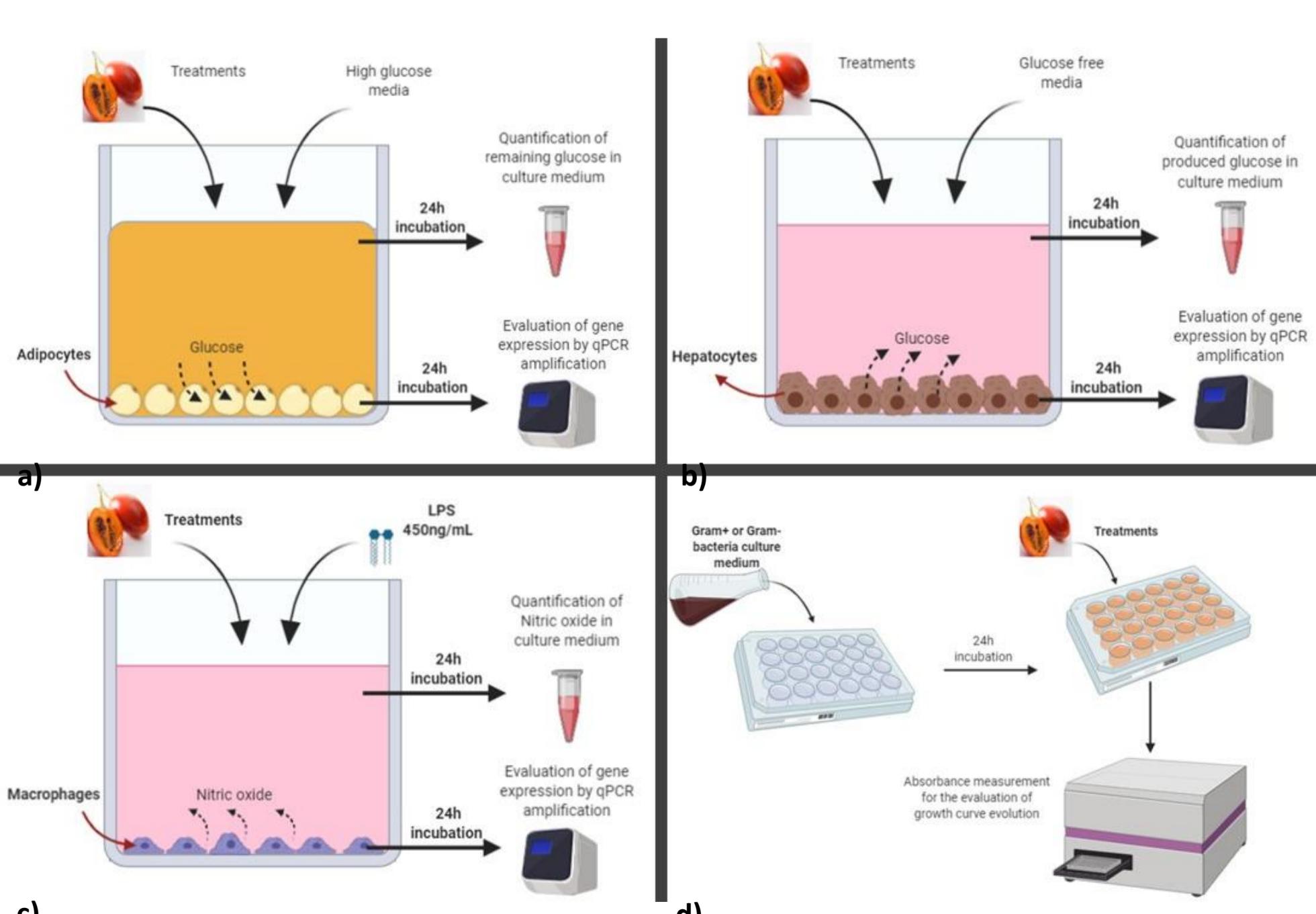


Figure 4. Invitro activity: a) y b) antidiabetic, c) inflammatory and d) antimicrobial

Results

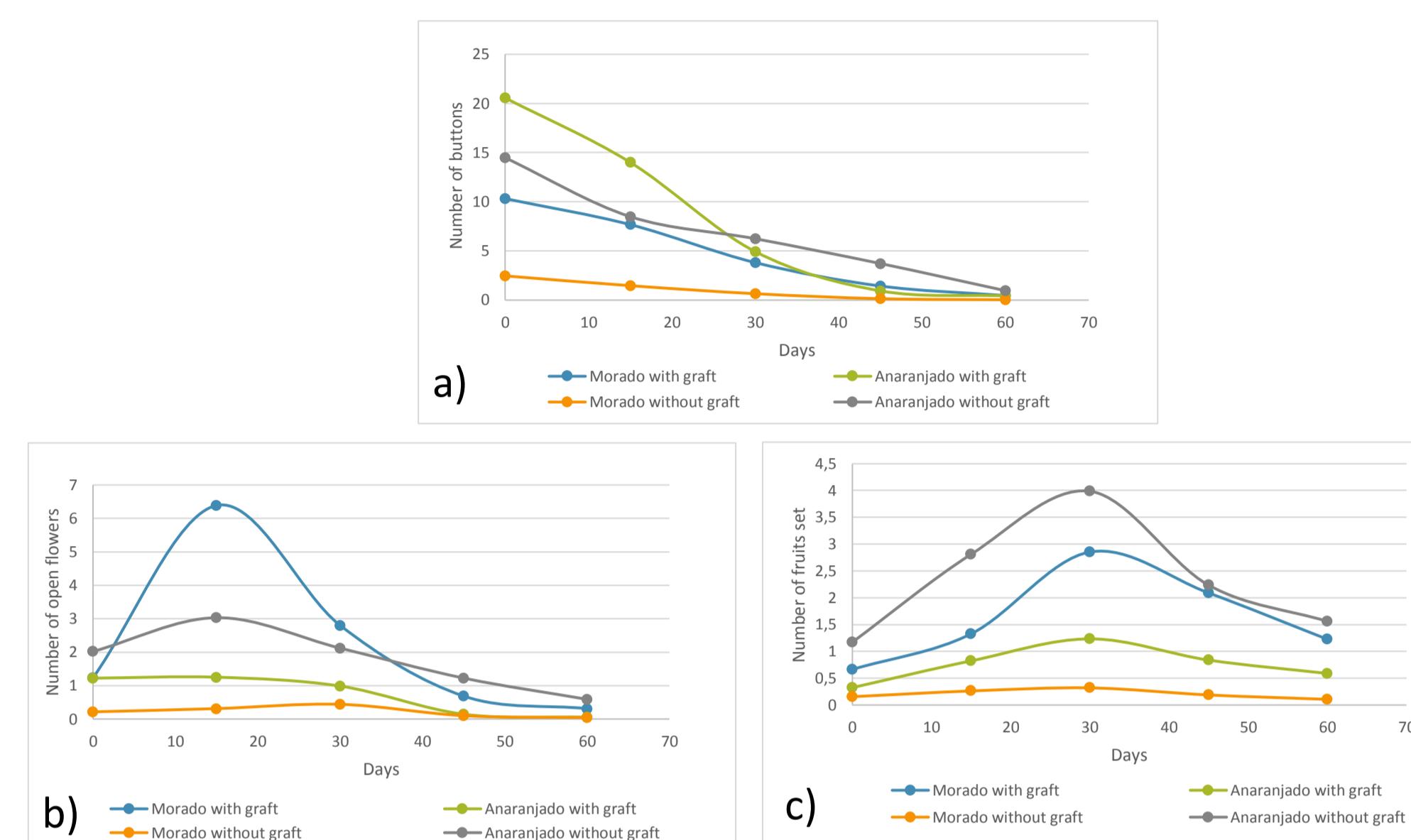
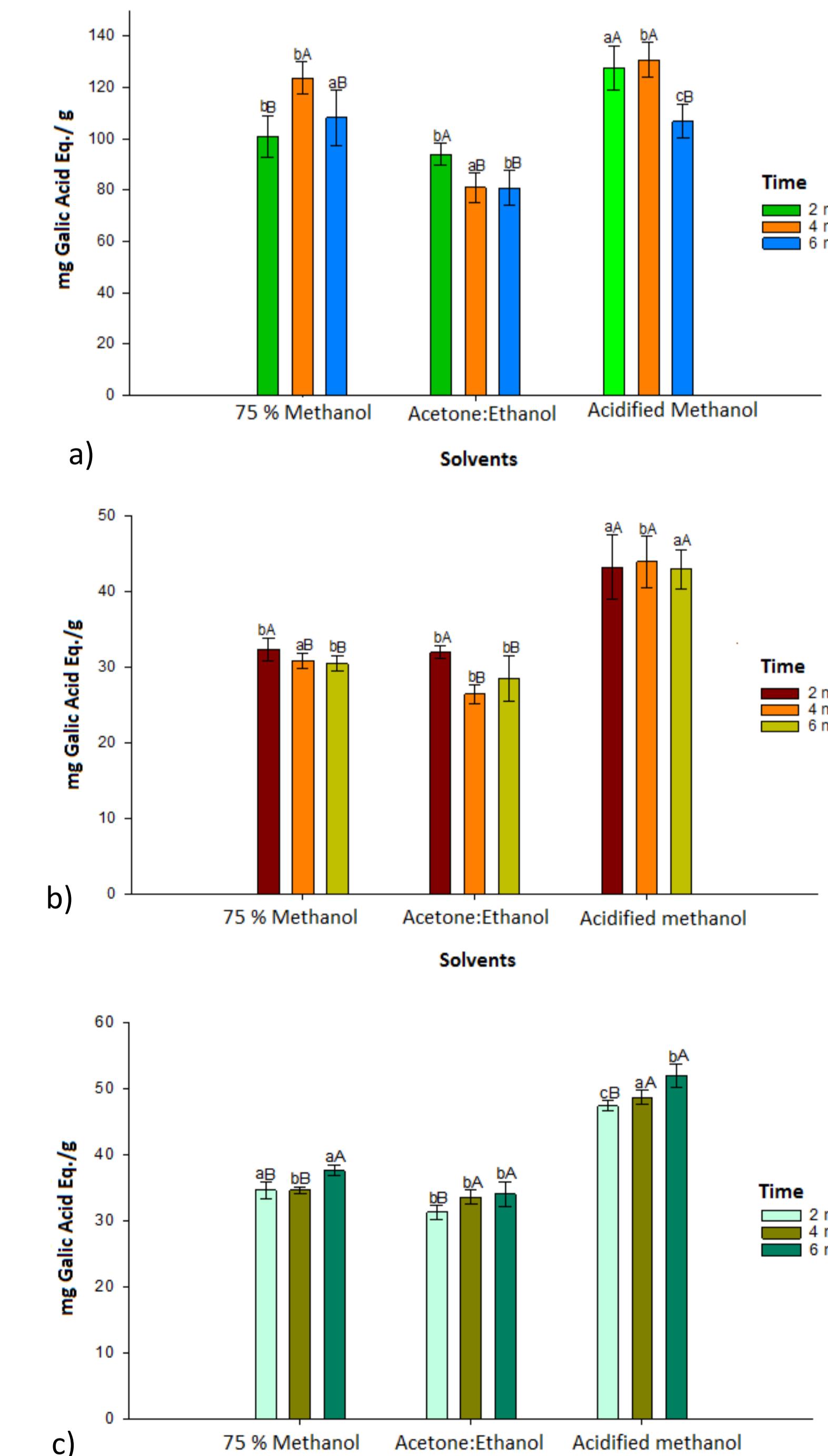


Figure 5. Study of floral evolution at 60 days, number of :a) buttons, b) open flowers and c) fruit set



Means with equal capital letters do not represent significant differences between solvents
Means with equal lower case letters do not represent significant differences between times

Figure 6. Phenolic compounds microextraction from fractions of the tree tomato ecotype 'anaranjado gigante' using different solvents and ultrasonic times. a) peel, b) pulp and c) seed-jelly

Conclusions

At 60 days, the buttons and open flowers developed until they reached the fruit set. The acidified methanol with an ultrasonic time of 4 minutes was the treatment that allowed a greater extraction of phenolic compounds for peel, mesocarp and seed-jelly of the tree tomato ecotype 'anaranjado gigante'. The joint work of the researchers and their institutions will allow the following results to be obtained at the end of the project: the physical-chemical, functional and bioactivity characteristics of the tree tomato fruits grafted with tobacco. These results will be reflected in written publications and participation in conferences. In addition, they will provide the baseline regarding the rootstock relationship and characteristics of the fruit, promoting the consumption of tree tomato based on the benefits of the fruit, which will be reflected in economic improvements for

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