Inducing embryogenic tissue for transformation of cassava *Manihot esculenta, Crantz*

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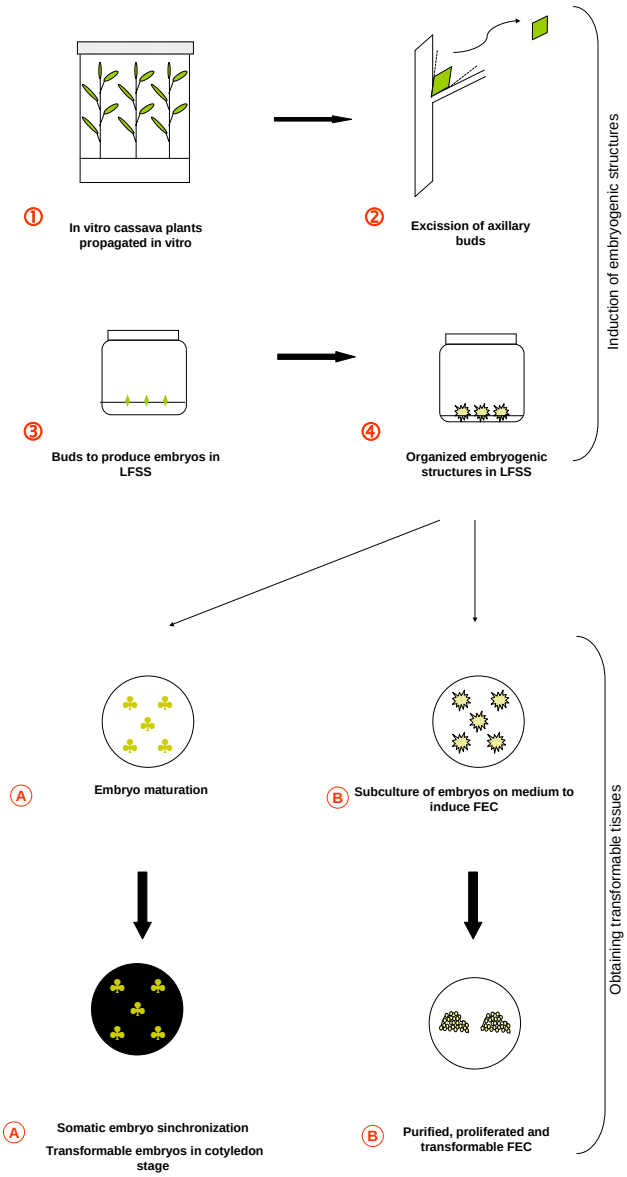
INTRODUCTION

Totipotent cells are necessary to transform plants and regenerate transgenic lines. In cassava, somatic embryos (SE) and Friable Embryogenic Callus (FEC) have been extensively employed to obtain transgenics. We have worked on the improvement of methods to produce embryogenic tissues, and have developed a very efficient and cheaper methodology which employs liquid medium to induce somatic embryos. The system is called Liquid Film Stationary System (LFSS). It helps reducing costs by using recyclable containers and by eliminating gelling agents. The principles of LFSS we explain below.

MATERIALS AND METHODS

Diagram depicting the main steps to produce embryogenic tissues.



RESULTS AND DISCUSSION

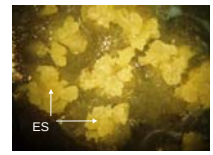
Inducing embryogenic structues

Advantages of using LFSS:

- Uses reciclable containers.
- No gelling agent.
- Reduces amount of medium (0.4 ml LFSS v.s. 2.7 ml in solid medium).
- Generates abundant and excellent quality, embryogenic structures.
- Better nutrition of explants (homgeneous medium v.s. nutrient-depleated areas in solid medium)

Massive production of emryogenic tissues in LFSS

Embryogenic structures (ES)



Average response (% of explants producing embryos) of cassava genotypes in LFSS.

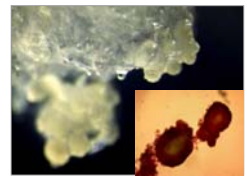
Clone	%
60444	82.8 (2825 of 3410)
MCOL 2215	77.5 (2648 of 3416)
CM 3306-4	72.5 (2264 of 3120)

Producing transformable tissues

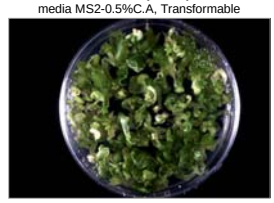
Organized embryogenic structures are excellent source of FEC and cotyledonary embryos.

Organized embryogenic structures

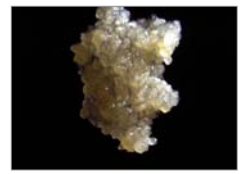
Induction of FEC



Matured somatic embryos cotyledonare on media MS2-0.5%C.A, Transformable

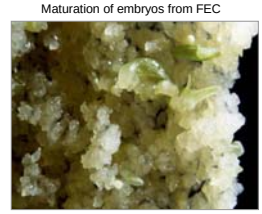


Transformable, purified FEC



Plant regeneration

Maturation of embryos from FEC



PERSPECTIVES

Producing FEC using LFSS seems promising. Initial attemps have shown excellent results.