**INTRODUCTION**

Ginkgo biloba is the last member of its division on earth. It is original from China where it has been used in traditional medicine for its vasodilator, cardioprotector and antioxidant proprieties. Lately it has also been reported as an important agent that helps to improve cognitive perception and memory.

Nowadays, amongst many alimentary complements, the main medicinal product available is Tanakan which contains the patented leaf extract EGb 761 from Ipsen, but it has low contents of the active metabolites present in Ginkgo.

**GINKGO BILOBA ACTIVE METABOLITES**

The main secondary metabolites of ginkgo biloba are:
- Flavonoids
  - Such as quercetin, kaempherol & myricetin
- Terpene-lactones:
  - Ginkgolides A & B and Bilobalide

Unlike the flavonoids, this terpene-lactones are exclusively found in this tree, giving it singularity and being the reason of its unique medicinal proprieties.

**OBJECTIVES**

Understand the conceptual basis of Ginkgo biloba in vitro cultures.

Establish an in vitro cell culture of Ginkgo biloba for production.

Make full use of the biotechnological tools to improve the culture.

Use the culture to obtain a viable product with better contents of secondary metabolites.

**CURRENT PROBLEMS**

- Inability to establish proper tissue cultures from roots.
- Long growth time needed to achieve enough biomass.
- Aggregates formation in absence of agitation.
- Goal biomass not always achieved before proceeding with the elicitation.

**BIOTECHNOLOGICAL SOLUTIONS**

- Screening and selection of calli
  - Ex: white calli with higher division rates.
- Optimization of culture conditions
  - Ex: light conditions and agitation intensity.
- Medium supplementation
  - Ex: sucrose & biosynthetic precursors (GPP, HMG-CoA).
- Elicitation
  - Ex: abiotic (NaCl, SNP) & biotic (MeJA or microorganisms).
- Genetic engineering
  - Ex: Increase the expression of HMGR-CoA (not tested yet).

**CONCLUSIONS**

The process was successfully described using all the current information available.

It would be necessary to conduct experiments in detail to test whether the process can be put into practice.

Further investigation on the improvement of Ginkgo biloba cell cultures is needed to achieve commercial viability.

**References:**


