# Embrió életképesség vizsgálata a tápoldatban található peptid biomarkerek segítségével

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## Összefoglalás

A fejlett országokban végbemenő negatív demográfiai változások, amelyek a társadalmak elöregedéséhez vezetnek, valamint a születések számának csökkenése az asszisztált reprodukciós technikák nagyobb hatékonyságát követelnék meg. Azonban az ezen módszerek segítségével elért születések aránya nem több, mint az embrióbeültetések egyharmada. Alternatív megoldásként merül fel az embriót körülvevő tápoldatkörnyezet molekuláris szintű vizsgálata, mely során olyan markereket keresünk, melyek lehetővé teszik az embriók új szempontú, nem invazív minőségi értékelését. Folyadékkromatográfiával kapcsolt tömegspektrometria segítségével vizsgáltunk meg kilencven tápoldat mintát (életképes és nem életképes embriók), mely során azonosítottunk egy 9 kDa tömegű fehérjét, amely mint mennyiségi marker szignifikáns eltérést mutatott az életképes és a nem életképes embriók mintái között. Módszerünk újdonsága, hogy méréseinket vakon, valós körülmények között végeztük 100%-os biztonsággal kiszűrve az életképtelen embriókat.

***Kulcsszavak:*** in vitro fertilizáció, vak klinikai vizsgálat, embrió életképesség, biomarker, tömegspektrometria

# Embryo viability assessment using biomarkers of the culture medium


## Summary

Negative demographic changes and the decreasing number of births in developed countries require the improvement of embryo viability assessment techniques. The success rate of *in vitro* fertilization however is not more than 30%. As an alternative, the search for biomarkers in the culture medium might serve to determine embryo viability using an approach hopefully more successful than the routinely used microscopic assay. In our research liquid chromatography coupled mass spectrometry was used in the search for possible biomarkers. We have found a 9kDa polypeptide which significantly differed in quantity between the samples of the viable and non-viable embryos. The novelty of our work is that our measurements were done in a blind way under real clinical circumstances. Using our assay the identification of non-viable embryos is possible with 100% confidence.



***Keywords:*** in vitro fertilization, blind assay, embryo viability, biomarker, mass spectrometry

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