

Cell culture technique in immunology: considering the in vivo influencing factors

Volume 2 Issue 6 - 2015

Abdelaziz Ghanemi^{1,2,3}¹Key Laboratory of Animal Models and Human Disease Mechanisms of the Chinese Academy of Sciences & Yunnan Province, Kunming Institute of Zoology, Chinese Academy of Sciences, China²Kunming College of Life Science, China³University of Chinese Academy of Sciences, China**Correspondence:** Abdelaziz Ghanemi, Key Laboratory of Animal Models and Human Disease Mechanisms, Kunming Institute of Zoology Chinese Academy of Sciences, No. 32 Jiaochang Donglu, Kunming 650223, China, Email ghanemiacabdelaziz@hotmail.com**Received:** November 28, 2015 | **Published:** November 30, 2015

Opinion

Cell culture represents an important aspect of the biological and medical research in both mechanisms studies and pharmacokinetics evaluations.^{1,2} It allows studying the cellular and molecular aspects within a certain context. However, cell-based tests allow the study/evaluation of parameters within a limited context compared to the *In Vivo* conditions. Indeed, under the *In Vivo* conditions the immune system is a part of a network that includes also other systems such as the hormonal system and the nervous system.³ Each one of the systems is in a continuous interaction with the other systems and within the same system continuous interactions have also been reported. These interactions could influence parameters such as cell growth, expression of certain receptors and the metabolic activities.

Therefore, the cell cultures on which immunological studies are based might not be fully extrapolated due to the differences in terms of influencing factors between the cell cultures conditions and the *In Vivo* conditions including the hormones and the neurotransmitters. Thus, adding factors such as immune factors, hormones and neurotransmitters, to mimic the *In Vivo* conditions, within the cell culture medium used to cultivate the immune cells would better mimic the *In Vivo* conditions toward a better extrapolation for the obtained results especially with the consideration of the exogenous molecules^{4,5} that can also influence the cell cultures of the immune cells.

The described concepts, although they have been defined for the cell cultures of the immune cells, are also applicable to the cell cultures derived from systems for which the constitutive cells are in continuous interactions either within the same system or with other systems.

Acknowledgements

Abdelaziz Ghanemi is a recipient of a 2013 CAS-TWAS President's Postgraduate Fellowship.

Conflicts of interest

Author declares there are no conflicts of interest.

Funding

None.

References

1. Ghanemi A. Cell cultures in drug development: Applications, challenges and limitations. *Saudi Pharmaceutical Journal* . 2015;23(4):453–454.
2. Ghanemi A. Is mapping borders between pharmacology and toxicology a necessity? *Saudi Pharma J*. 2014;22(6):489–490.
3. Ghanemi A. Psychiatric neural networks and neuropharmacology: Selected advances and novel implications. *Saudi Pharmaceutical Journal* . 2014;22(2):95–100.
4. Ghanemi A. Biological properties and perspective applications of Bioneutre chemicals? *Saudi Pharm J*. 2014;22(1):1–2.
5. Ghanemi A. Toward overcoming the challenges facing biomedical analyses. *Alexandria Journal of Medicine* . 2015;51(3):277–278.