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Razak, R.N.H.A.[a b] , Jalil, M.A.B.A.[a b] , Isa, N.F.[a] , Hazidan, A.N.Z.B.[b] , Kelana, M.F.B.[b] , Losman, N.A.R.F.[b] , Mazlan, M.A.[b] , Md Isa, M.L.B.[b] , Ibrahim, M.[c]

SYSTEMATIC REVIEW ON THE APPLICATION OF CELLULAR CULTURE TECHNOLOGY APPROACH IN CONSERVATION OF ENDANGERED SPECIES

(2024) *Malaysian Journal of Biochemistry and Molecular Biology*, 27 (2), pp. 31-37.

[a] Kuliyyah of Nursing, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, Bandar Indera Mahkota, Pahang, Kuantan, 25200, Malaysia

[b] Institute of Planetary Survival for Sustainable Well-being (PLANETIIUM), International Islamic University Malaysia, Jalan Hospital, Level 2, Pahang, Kuantan, 25100, Malaysia

[c] Department of Physics, Faculty of Science, Benha University, Benha, 13518, Egypt

Abstract

The extinction of wildlife species is concerning. This issue has posed a threat to the whole biodiversity system significantly. Nevertheless, the extinction of wildlife species can be controlled and stabilized through a conservation program of in situ and ex situ approach respectively but in need of additional programs to save the species. This situation emphasizes the importance of ex situ conservation strategies, particularly cellular technology, in supplementing in situ efforts, which are becoming increasingly challenging. Cellular technology has an important role in conserving genetic diversity through optimized protocols such as assisted reproductive technology (ART). This paper conducts a systematic review and critical analysis of the current understanding of cellular technology in conservation. The study conducted an electronic search in three databases such as PubMed, ScienceDirect, and Scopus for articles published between 2010 and 2021. The search used keywords such as “cellular technology,” “assisted reproductive technology,” “cryopreservation,” “conservation,” “rescue,” “save,” and “endangered species.” The findings suggest that assisted reproductive technologies are identified as cellular technologies for ex situ conservation efforts. However, the effectiveness of these technologies depends on various parameters specific to each endangered species. These parameters include genetic diversity, estrous cycle length, timing and method of semen collection, and the sperm quality and quantity. This review explores the application of cellular technology for conservation of endangered species and their future impact in conservation programs. More exploration is needed to fully harness the potential of cellular technologies in saving endangered species.

Author Keywords

Assisted reproductive technology; Cellular technology; Conservation; Endangered species

Funding details

International Islamic University MalaysiaIIUMRMCG20-011-0011
International Islamic University MalaysiaIIUM

The authors would like to thank the International Islamic University Malaysia (IIUM) for funding this project (Project No.: RMCG20-011-0011).

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Correspondence Address
Md Isa M.L.B.; Institute of Planetary Survival for Sustainable Well-Being (PLANETIIUM), Level 2, Pahang, Malaysia; email: lokman@iium.edu.my

Publisher: Malaysian Society for Biochemistry and Molecular Biology

ISSN: 15112616
Language of Original Document: English

Abbreviated Source Title: Malays. J. Biochem. Mol. Biol.
2-s2.0-105001685112
Document Type: Review
Publication Stage: Final
Source: Scopus