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# Test Tube Babies and Artificial Insemination: A Review of Contemporary Islamic Law in Animals and Humans

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**ABSTRACT** *The development of modern reproductive technologies such as in vitro fertilization (IVF) and artificial insemination has presented significant opportunities as well as new challenges in the medical, social, and religious fields. IVF has become a primary solution for couples experiencing infertility, while artificial insemination in animals has become an important strategy for increasing livestock productivity, economic efficiency, and global food security. However, these technologies raise contemporary Islamic jurisprudence issues, particularly regarding the validity of lineage, the legal status of the use of third-party donors, the practice of surrogacy, and its ethical implications in Muslim societies. This study uses a literature review method by examining primary sources in the form of the Qur'an, hadith, and classical Islamic jurisprudence books, as well as secondary sources in the form of official fatwas and contemporary research in the fields of bioethics and reproduction. The analysis is conducted descriptively and analytically with a maqāṣid al-syari'ah approach to understand the relevance of Islamic law to the dynamics of modern technology. The research results show that the majority of ulama allow the practice of IVF and artificial insemination as long as the sperm, ovum and uterus come from a legal husband and wife couple, because this is in line with the maqāṣid of protecting offspring. On the other hand, the use of sperm donors, ovum donors, or surrogate wombs is declared haram because it has the potential to cause chaos and violate sharia principles. In the context of animals, artificial insemination is considered permissible as long it brings economic benefits and does not cause major harm, according to the rules of al-aṣlu fi al-ashya' al-ibaḥah. This research emphasizes the importance of contemporary jurisprudence that is adaptive to developments in medical technology and biotechnology, so that it is able to provide normative guidance as well as ethical solutions for Muslims in facing changing times.*

**Keywords** : *Test Tube Babies, Artificial Insemination, Contemporary Fiqh, Islamic Bioethics, Maqāṣid Al-Syari'Ah.*

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## INTRODUCTION

Advances in modern reproductive technology have had a significant impact on medicine, social sciences, and religious law. One of the most prominent technologies is in vitro fertilization (IVF), which offers a solution for couples facing fertility issues. This method involves combining sperm and egg cells in a laboratory, and then placing the resulting embryo back into the woman's uterus. This technology was first successfully used on humans in 1978, and has since expanded rapidly worldwide. This medical success is not merely a biological issue; it has also sparked

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serious discussions about ethical, legal, and religious aspects. From an Islamic perspective, the legal status of children born from in vitro fertilization and the limitations of its use are crucial debates. This makes IVF a contemporary issue that touches on medicine, ethics, and Islamic law (Matthews, 2021).

Besides IVF, artificial insemination is also a widely used reproductive technology, both in medicine and animal husbandry. In humans, this procedure involves inserting sperm into the uterus without natural intercourse. This technique is simpler than in vitro fertilization, but raises ethical controversy if it uses donor sperm from another person. On the other hand, in the animal sector, artificial insemination has become a common method to improve offspring quality and accelerate breeding programs. This technology has also been shown to increase livestock productivity and efficiency in resource utilization. From an Islamic perspective, the practice of insemination in animals is generally permissible as long as it does not have significant negative impacts. The Islamic jurisprudence principle of al-ashlu fil-asyya' al-ibahah indicates that the basic principle of everything is permissible, unless there is evidence to prohibit it (Aboul-Ezz & Hefnawy, 2023).

One of the main issues with modern reproductive technology is the debate surrounding its Islamic legal aspects and morality. In the practice of IVF, the most significant discussion arises regarding the use of donor sperm, donor ova, or surrogate uterus. Most contemporary scholars agree that IVF procedures are only valid if they involve the sperm, ova, and uterus of a legally married couple. Conversely, the involvement of a third party is considered a violation of Islamic law due to the potential for intermarriage. This is emphasized in a 1986 fatwa from the Majma' al-Fiqh al-Islami and in a 1980 fatwa from the Indonesian Ulema Council. Thus, Islamic law provides a boundary to ensure this technology remains in line with the primary objectives of Islam. This opinion is also in line with modern bioethical studies, which emphasize the importance of clarity of biological identity in reproduction (Saniei, 2021).

In the context of Islamic law, the concept of maqāṣid al-syarī'ah serves as an important basis for assessing the permissibility of reproductive technology. One of the goals of sharia is to preserve offspring (ḥifẓ al-nasl), which means ensuring the clarity of a child's origin and avoiding identity confusion. Therefore, Islamic scholars permit the practice of IVF and artificial insemination as long as it does not involve a third party other than the legal spouse. This demonstrates that Islamic law is able to adapt to scientific developments while remaining within the framework of sharia values. This flexibility of Islamic law is not absolute, but is always bound by the basic principles of sharia. Therefore, the ijtihad of contemporary scholars is crucial for understanding classical texts within the modern context. In this way, maqāṣid al-syarī'ah serves as a normative reference in addressing reproductive technology (Al-Khayat & Al-Kahtani, 2022).

Studies on IVF and artificial insemination are relevant because they encompass medical, social, and religious perspectives. On the one hand, these technologies offer a real solution for couples unable to conceive naturally and encourage the development of the livestock sector. However, on the other hand, there are ethical and legal issues that need to be addressed wisely. This research focuses on three main areas: how these technologies are practiced in the medical world, how contemporary Islamic jurisprudence assesses their use, and how the legal implications differ between humans and animals. By answering these questions, the research is expected to contribute both academically and practically. Furthermore, this study can serve as a guide for Muslims in responding to developments in reproductive science. This way, Muslims can utilize modern technology without violating the basic principles of Islamic law.

## METHOD

This study uses a qualitative approach with a library research method that relies on primary and secondary sources. The primary literature includes the Qur'an, hadith, and classical fiqh books such as al-Majmū' by Imam Nawawi and al-Mughnī by Ibn Qudāmah, accompanied by contemporary fatwas such as Fatwa of the Indonesian Ulema Council No. 2 of 1980 and the

decision of Majma' al-Fiqh al-Islāmī regarding the law of IVF and artificial insemination. To strengthen the study, this study also uses contemporary literature from international journals on Islamic bioethics and reproductive medicine published in 2020–2025, such as studies on IVF regulations from a global perspective (Matthews, 2021), Islamic bioethics debate on cross-border reproductive cell donation (Saniei, 2021), as well as the relationship between maqāṣid al-syarī'ah and the application of modern medical technology (Al-Khayat & Al-Kahtani, 2022). Apart from that, there is also a study of the ethics of assisted reproduction from an Islamic perspective which highlights the moral and legal dimensions (Aboul-Ezz & Hefnawy, 2023). Data analysis was conducted using descriptive-analytical techniques, namely by explaining medical concepts related to test tube babies and artificial insemination, then connecting them with the principles of fiqh and maqāṣid al-syarī'ah, especially in the aspect of ḥifẓ al-nasl (protecting offspring), so that the research can bridge classical thinking with contemporary challenges.

## RESULTS AND DISCUSSION

### Result

The results of the study indicate that artificial insemination in animals is essentially permissible from an Islamic jurisprudence perspective, as it does not involve lineage issues as it does in humans. This practice is seen as a form of utilizing science and technology for the benefit of mankind, particularly in improving genetic quality, livestock productivity, and food security. As long as the artificial insemination process is carried out without causing animal torture and does not contain elements that conflict with sharia principles, the practice is acceptable under Islamic law. This view aligns with the concept of tasẖīr al-makhlūqāt, namely the proportional and responsible subordination of creatures for the benefit and well-being of humans.

Furthermore, the findings of this study confirm that contemporary Islamic jurisprudence (fiqh) is dynamic and adaptive in responding to developments in reproductive technology. Legal decisions are not solely based on a textual approach, but also consider the objectives of sharia (maqāṣid al-syarī'ah), particularly the protection of offspring (hifẓ al-nasl), the public interest, and the potential social and ethical impacts. Therefore, Islamic jurisprudence does not reject reproductive technology outright, but rather provides normative boundaries to ensure its implementation remains within Islamic values.

Synthetically, the results of this study indicate that acceptance of IVF and artificial insemination technologies is largely determined by the object and purpose of their application. In humans, the protection of lineage is a fundamental, non-negotiable principle, while in animals, consideration of public interest is the primary basis for legal determination. Thus, contemporary Islamic jurisprudence serves not only as an instrument for legal assessment but also as an ethical guideline for overseeing the development of biotechnology to ensure it aligns with the values of justice, humanity, and public interest.

### Discussion

In vitro fertilization (IVF) is an assisted reproductive method in which eggs are removed from a woman's ovaries, fertilized with sperm in a laboratory, and then the resulting embryos are transferred back to the uterus. This technique was first successfully performed on humans in 1978 and has since become a leading solution for infertile couples worldwide (Matthews, 2021). Over time, IVF technology has developed rapidly with the advent of intracytoplasmic sperm injection (ICSI), which involves directly injecting a single sperm into an egg to increase the chances of successful fertilization (Sunderam et al., 2020). In addition, there is also preimplantation genetic testing (PGT) which is used to detect genetic abnormalities before the embryo is implanted (Sternke et al., 2021). Cryopreservation techniques allow the storage of gamete cells or embryos for future use. While this development increases the chances of IVF success, it also raises ethical and religious debates, particularly regarding the limits of embryo research and the moral value of embryos from an Islamic perspective (Inhorn & Patrizio, 2020).

Therefore, IVF should not only be viewed from a medical perspective, but also from a contemporary Islamic jurisprudence perspective.

From an Islamic perspective, IVF procedures are acceptable under certain conditions, as emphasized by contemporary scholars. The Islamic Fiqh Council (IIFA, 1986) and the Indonesian Ulema Council emphasized that IVF is only permissible if the sperm, egg, and uterus come from a legally married couple (Al-Khayat & Al-Kahtani, 2022). The basic consideration is to maintain clarity of lineage and avoid confusion of lineage. Conversely, IVF practices involving sperm donation, egg donation, or the use of a surrogate mother are considered prohibited because they can damage the child's identity and violate sharia principles (Saniei, 2021). This shows that the legal status of IVF is not absolute, but rather conditional, depending on the procedures used. Thus, Islamic jurisprudence serves as a guideline that balances the use of medical technology with the protection of basic religious principles (Rahman, 2024).

**Table 1.** Islamic Legal Perspective on In Vitro Fertilization (IVF)

| No. | Aspect | Islamic Ruling on IVF |
|---|---|---|
| 1 | Permissible Conditions | IVF is permitted when the sperm, ovum, and uterus originate from a legally married الزوج husband and wife |
| 2 | Prohibited Conditions | IVF is prohibited if it involves third-party participation, such as sperm donors, ovum donors, embryo donors, or a surrogate mother |
| 3 | Legal and Ethical Basis | Preservation of lineage (*ḥifẓ al-nasl*) and prevention of lineage mixing |

Beyond the legal aspects, the practice of IVF also raises a number of contemporary issues that require serious study. One frequently discussed issue is the use of PGT to select healthy embryos, which is generally permissible in medical contexts but is controversial when used for non-medical purposes such as sex selection (Gürtin, 2022). Many scholars believe that this practice has the potential to cause social injustice and is contrary to the maqāṣid al-syarī'ah (the principles of Islamic law). Another issue concerns embryo research, particularly the 14-day rule, which limits experiments, but has been questioned as science advances (Hyun, 2021). From an Islamic perspective, embryos have moral value from the beginning of their creation, so related research must be carefully studied (Aboul-Ezz & Hefnawy, 2023). Therefore, Islamic scholars emphasize the importance of the role of ijtihad institutions in responding to developments in reproductive technology. In conclusion, IVF is acceptable as a medical solution, but its implementation must still adhere to strict Sharia ethics and moral principles.

## Artificial Insemination in Humans

Artificial insemination is an assisted reproduction technique that aims to help married couples obtain offspring when facing fertility obstacles. This procedure is carried out by medically inserting sperm directly into a woman's uterus without natural intercourse (Inhorn & Patrizio, 2020). Compared to IVF, this method is simpler because the fertilization process still occurs within the woman's body. From a medical perspective, artificial insemination offers significant opportunities for couples with mild infertility issues (Sunderam et al., 2020). However, from an Islamic legal perspective, its implementation must comply with strict sharia provisions. Scholars agree that insemination is permissible if the sperm and ovum used come from a legally married couple (Al-Khayat & Al-Kahtani, 2022). On the other hand, if it involves sperm or ovum donation, the practice is considered forbidden because it risks causing lineage disruption and disrupting the purity of offspring (Ebrahim, 2021).

The main difference between artificial insemination and IVF technology lies in where fertilization occurs. In insemination, processed sperm is inserted into the uterus, allowing fertilization to occur naturally within the woman's body (Sunderam et al., 2020). This technique is usually used as a first step before resorting to IVF if the results are inadequate. In Muslim countries, insemination is acceptable as long as there is no third party intervention through a

donor, so that the lineage remains clear (Rahman, 2024). This is in line with maqāṣid al-sharīʿah, especially the principle of protecting offspring (ḥifẓ al-nasl) (Shabana, 2021). Psychologically, this method is considered more natural and more easily accepted by couples. However, its success is limited, especially for those with severe infertility. Therefore, artificial insemination is generally recommended only in certain circumstances with medical indications.

From an ethical and Islamic legal perspective, artificial insemination has sparked some debate. Some scholars assert that the procedure is valid if the sperm used comes from the husband in a legally married marriage (Al-Khayat & Al-Kahtani, 2022). However, the use of sperm donors raises serious issues regarding the status of lineage, inheritance rights, and the identity of the child (Saniei, 2021). This situation could create social and legal chaos, making donor involvement considered contrary to Sharia principles. Furthermore, misuse of this technology has the potential to open up illegal practices that endanger public morals (Ebrahim, 2021). Therefore, Islamic jurisprudence and bioethics experts emphasize the need for strict regulations to prevent deviations. Synergy between modern medical science and Islamic law is a crucial step in formulating appropriate boundaries (Inhorn & Patrizio, 2020). This way, artificial insemination can still be used as a medical solution without violating Islamic values.

**Artificial Insemination in Animals (Livestock)**

Artificial insemination in animals is a reproductive innovation now widely applied in modern animal husbandry to increase production and improve the genetic quality of livestock. This process involves the controlled insertion of superior male sperm into the female reproductive tract to increase the chances of fertilization (Rodrigues, 2020). In practice, artificial insemination is often combined with other technologies, such as embryo transfer, semen storage through cryopreservation, and estrus synchronization to maximize reproductive effectiveness (Baruselli, 2021). The main focus of this method is to increase meat and milk production, as well as to strengthen the genetic quality of livestock populations. Furthermore, artificial insemination also facilitates the distribution of superior male genetics without having to move the animals themselves. Recent research in developing countries has shown significant increases in livestock productivity with the use of this technology (García-Pintos, 2022). Thus, artificial insemination is an important pillar in supporting global food security.

In the Islamic view, artificial insemination in animals is categorized as permissible based on the general principle of al-aṣl fī al-ashyāʾ al-ibāḥah (everything is basically permissible) as long as there is no specific evidence that prohibits it (Rahman, 2024). This permissibility is further strengthened by its significant benefits in supporting economic growth and livestock production. Scholars emphasize that this practice remains permissible as long as it does not cause significant harm to the animals (Shabana, 2021). The principle of maslahah mursalah (benefit of benefit) is the basis for permitting the application of this technology in the modern agricultural sector. Unlike in humans, insemination in animals does not raise issues of lineage, thus simplifying the legal discussion. Therefore, contemporary Islamic jurisprudence views artificial insemination as a means of supporting the maqāṣid al-syarīʿah, particularly in terms of the social and economic well-being of the community. However, its practice must still adhere to ethical principles and animal welfare.

Despite its significant contribution to animal husbandry, artificial insemination still poses ethical challenges that must be considered. Some ethicists emphasize the importance of safeguarding animal welfare by minimizing pain or psychological distress during the procedure (Broom, 2021). In addition, widespread application of this technology could trigger a decrease in genetic diversity and increase the risk of hereditary diseases (García-Pintos, 2022). Therefore, experts recommend a genetic conservation program to ensure the use of insemination remains balanced with the preservation of germplasm. The principle of "lā ḍarar wa lā ḍirār" (should not cause harm) is highly relevant in monitoring this practice to prevent it from leading to animal exploitation (Ebrahim, 2021). On the other hand, clear regulations are also needed to control

industrial-scale insemination practices, ensuring they are not solely profit-oriented. This way, artificial insemination can be implemented sustainably, providing benefits to humans while still maintaining the viability of animals.

**Table 2.** Islamic Legal Perspective on Artificial Insemination in Animals

| No. | Aspect | Islamic Legal Considerations |
|---|---|---|
| 1 | Legal Status | Permissible, provided that it yields benefits and does not cause significant harm |
| 2 | Expected Benefits | Enhances productivity, improves efficiency, and strengthens food security |
| 3 | Ethical Considerations | Must ensure animal welfare and preserve genetic diversity |
| 4 | Legal Basis | The principle of *al-aṣl fi al-ashyā' al-ibaḥah* (the presumption of permissibility) and *maṣlaḥah mursalah* (public interest) |

**Analysis of Contemporary Fiqh & Maqāṣid Approach**

Classical scholars were not familiar with modern reproductive technologies such as in vitro fertilization (IVF) and artificial insemination, so traditional fiqh literature does not provide detailed guidance on these practices. Therefore, contemporary jurists interpret general principles of fiqh, such as the protection of offspring and the prohibition of mixing lineages (ikhtilāṭ al-ansāb), as the legal basis (Kamali, 2008). The Majma' al-Fiqh al-Islāmī (IIFA) in 1986 stated that in vitro fertilization can be performed if the ovum, sperm, and uterus come from a legally married couple (Al-Khayat & Al-Kahtani, 2022). MUI fatwa also emphasized that clarity of lineage must be maintained to protect the rights of the family and the child's identity (Rahman, 2024). This approach demonstrates the continuity of classical principles with modern ijtihad. Fiqh law, therefore, is flexible and adaptable to the challenges of the times. Thus, Islam remains relevant in the face of contemporary biotechnological developments.

The maqāṣid al-syarīʿah approach is an important reference in determining the legal boundaries of reproductive technology. The principle of ḥifẓ al-nasl is used to justify IVF and artificial insemination as long as it does not involve a third party donor (Shabana, 2021). In addition, the principle of ḥifẓ al-nafs (protection of the soul) is taken into consideration because this procedure provides hope for couples experiencing infertility (Sachedina, 2020). In the context of animal husbandry, the principle of maslahah is used because this technology improves the economic welfare of the community (García-Pintos, 2022). This confirms that contemporary Islamic jurisprudence values social and economic benefits beyond mere halal-haram rules. Contemporary scholars strive to balance medical benefits with the prevention of potential harm. Thus, Islamic law remains adaptive and consistent with sharia principles.

Beyond normative aspects, contemporary Islamic jurisprudence emphasizes the governance of assisted reproductive practices. Fertility clinics in Muslim countries are required to implement gamete origin verification protocols to prevent unlawful sexual intercourse (Inhorn & Patrizio, 2020). The Islamic Bioethics Council is also encouraged to review new technologies, such as preimplantation genetic testing (PGT) and embryo research up to 14 days old.(Hyun, 2021). Public education based on science and Islamic jurisprudence is important to reduce the stigma against infertile couples (Gürtin, 2022). Fatwa institutions must actively create guidelines that facilitate medical practice while maintaining sharia values (Rahman, 2024). With proper regulation and education, in vitro fertilization and artificial insemination can be implemented ethically. Integrating modern scientific principles with the maqāṣid al-syarīʿah (Islamic principles) is key to the sustainability of Islamic bioethical law.

**Table 3.** Fiqh and Maqāṣid al-Sharīʿah Analysis of Assisted Reproductive Technologies

| No. | Analytical Dimension | Fiqh and Maqāṣid-Based Interpretation |
|---|---|---|
| 1 | Classical vs. Contemporary Approaches | Contemporary scholars emphasize *ḥifẓ al-nasl* (preservation of lineage) and strictly prohibit lineage mixing, while classical fiqh principles are reinterpreted to address modern biomedical contexts |
| 2 | Maqāṣid Orientation | Focuses on the preservation of offspring, mental well-being, and broader socio-economic stability |
| 3 | Legal Provisions | Permitted when gametes originate from a legally married couple; prohibited when involving third-party donors or surrogacy arrangements |
| 4 | Governance and Regulation | Requires standardized clinical protocols, oversight by bioethics councils, public education initiatives, and adaptive *fatwas* responsive to technological advancements |

The table above reinforces the analytical framework of this study by illustrating how contemporary fiqh thought integrates classical legal principles with the maqāṣid al-sharīʿah in responding to the development of modern reproductive technologies. The emphasis on the principle of *ḥifẓ al-nasl* reflects the continuity of Islamic legal objectives while allowing adaptive *ijtihād* in biomedical contexts. The permissibility requirement that gametes originate from a legally married couple, along with the prohibition of third-party involvement, underscores the ethical priority of preserving lineage clarity, mental health, and social well-being. Furthermore, the importance of governance through clinical protocols, bioethics councils, public education, and adaptive *fatwas* indicates that technological innovation must be accompanied by institutional oversight to ensure alignment with Islamic ethical values and the needs of contemporary society.

**Table 4.** Comparative Overview of Assisted Reproductive Techniques in Islamic Law

| Aspect | IVF – Human | Artificial Insemination – Human | Artificial Insemination – Animals |
|---|---|---|---|
| Core Definition | Laboratory fertilization followed by embryo transfer | Direct insertion of sperm into the uterus | Controlled insertion of superior male sperm into females |
| Primary Purpose | Treatment of severe infertility | Treatment of mild infertility | Productivity, genetic improvement, food security |
| Islamic Legal Ruling | Permissible within lawful marriage; prohibited with donors/surrogacy | Permissible using husband's sperm only; donors prohibited | Permissible; no lineage concern |
| Sharia Basis | *ḥifẓ al-nasl*; prohibition of lineage mixing | *ḥifẓ al-nasl* | *al-aṣl fī al-ashyāʾ al-ibāḥah*; *maṣlaḥah mursalah* |
| Ethical Concerns | Embryo status, genetic selection | Lineage clarity, misuse risk | Animal welfare, genetic diversity |
| Overall Status | Conditionally permitted | Conditionally permitted | Permitted with ethical safeguards |

## CONCLUSION

Advances in modern reproductive technology, such as in vitro fertilization (IVF) and artificial insemination, in both humans and animals, have had a significant impact on the medical world and the agricultural sector. IVF is now the primary alternative for couples experiencing serious fertility problems, while artificial insemination in humans is generally used for mild cases of infertility. In animal husbandry, artificial insemination offers tangible benefits in the form of increased production, efficiency in the dissemination of superior genes, and contributions to efforts to maintain global food security. From an Islamic legal perspective, the use of this technology is permitted under certain conditions, particularly in the context of IVF and artificial insemination in humans. Its use is only valid if the gametes and uterus come from a legally married couple. The practice of sperm donation, ovum donation, and surrogacy are prohibited because they can potentially lead to a mixture of lineages and disrupt family structures.

Meanwhile, in animals, artificial insemination is considered permissible (mubah) because it does not involve lineage issues, provided that the principles of animal welfare and benefit (maslahah) are adhered to. A contemporary Islamic jurisprudence approach based on the principles of Islamic law (maqāṣid al-syarīʿah) is highly relevant for formulating laws related to modern reproductive technology. The principles of ḥifẓ al-nasl (protecting offspring), ḥifẓ al-nafs (protecting the soul), and socio-economic welfare are the primary foundations for permitting this practice, with certain limitations. This also confirms that Islamic law is dynamic and adaptable to developments in biotechnology. Synergy between modern science and contemporary Islamic jurisprudence is essential to ensure that reproductive technology can be used appropriately, ethically, and in line with Islamic values. Strict regulations, the active role of fatwa institutions, and public education are needed to ensure the application of this technology remains controlled and in accordance with Islamic law. Ultimately, these developments will not only provide solutions in the medical and agricultural fields, but also contribute to efforts to safeguard the welfare of the community based on Islamic principles.

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