

Toward an Eco-Theological Jurisprudence of Cultivated Meat: Jasser Auda's *Maqāṣid al-Sharī'ah* as Framework for Sustainable Food Ethics

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Abstract: The emergence of cultivated meat represents one of the most significant biotechnological innovations reshaping global food systems, while simultaneously challenging the epistemological foundations of classical Islamic jurisprudence governing food ethics. Existing Islamic legal discourse has predominantly evaluated cultivated meat through a narrow framework of ritual permissibility (*halāl*) and purity (*ṭahārah*), paying comparatively limited attention to broader objectives of Islamic law concerning environmental sustainability, food security, public welfare, and ecological responsibility. This article proposes an eco-theological reconstruction of Jasser Auda's systems-based *Maqāṣid al-Sharī'ah* as an integrative framework for evaluating cultivated meat within contemporary Islamic legal thought. Employing a qualitative doctrinal-philosophical approach, the study critically synthesizes classical and contemporary Islamic legal scholarship, literature on cellular agriculture, Islamic environmental ethics (*fiqh al-bī'ah*), and sustainable food governance. The analysis applies Auda's multidimensional systems approach—particularly its cognitive, holistic, openness, and purposefulness features—to reinterpret the five essential objectives of the *Sharī'ah* in relation to emerging food biotechnology. The findings demonstrate that cultivated meat cannot be adequately assessed solely through conventional legal categories of lawful and unlawful consumption. Instead, its legitimacy depends upon a multidimensional evaluation encompassing the protection of religion (*ḥifẓ al-dīn*), human life (*ḥifẓ al-nafs*), intellect (*ḥifẓ al-'aql*), progeny (*ḥifẓ al-nasl*), wealth (*ḥifẓ al-māl*), environmental stewardship, and intergenerational justice. Integrating eco-theological principles of *khilāfah*, *amānah*, and *mīzān* further strengthens the argument that Islamic jurisprudence possesses sufficient methodological flexibility to respond constructively to emerging food technologies while maintaining fidelity to its ethical foundations. This study contributes to contemporary Islamic bioethics by proposing an integrated Eco-Theological *Maqāṣid* Framework capable of informing halal governance, sustainable food policy, and future regulatory development for Muslim-majority societies confronting global food security challenges.

Keywords: Cultivated Meat; Islamic Law; *Maqāṣid al-Sharī'ah*; Jasser Auda; Eco-Theology; Sustainable Food Governance; Islamic Bioethics; Food Security.

Introduction

The global food system is entering a period of profound transformation driven by the convergence of rapid population growth, accelerating climate change, environmental degradation, and technological innovation. According to projections of international food security agencies, the world's population is expected to approach ten billion people within the next few decades, creating unprecedented pressure on agricultural production systems and natural resources. Conventional livestock farming, while remaining the primary source of animal protein, has increasingly been criticized for its substantial contribution to greenhouse gas emissions, excessive freshwater consumption, extensive land use, biodiversity loss, and growing concerns regarding animal welfare (Reddy et al., 2022; Rodríguez Escobar et al., 2021). These multidimensional challenges have stimulated an international search for alternative protein sources capable of maintaining nutritional adequacy while reducing ecological burdens. Consequently, food biotechnology has emerged not merely as a technological innovation but as an essential component of future sustainable food governance.

Among the most significant innovations within cellular agriculture is cultivated meat, also referred to as cultured meat, cell-based meat, in vitro meat, or lab-grown meat. Unlike conventional meat production, cultivated meat is produced by proliferating animal cells under controlled laboratory conditions without requiring the slaughter of whole animals. Since the public introduction of the first cultured beef hamburger by Mark Post in 2013, technological progress has accelerated rapidly, accompanied by increasing governmental attention, industrial investment, and regulatory development across several jurisdictions (Post et al., 2017; Mateti et al., 2022). Supporters argue that cultivated meat offers considerable environmental advantages through reductions in greenhouse gas emissions, land occupation, water consumption, antimicrobial use, and zoonotic disease risks while simultaneously addressing concerns regarding animal welfare (Rodríguez Escobar et al., 2021). Nevertheless, the technology has also generated complex ethical, regulatory, cultural, and religious questions that extend far beyond scientific feasibility alone.

These developments possess particular significance for Muslim-majority societies where food consumption is governed not only by nutritional and economic considerations but also by comprehensive religious norms concerning *halāl*, *ṭayyib*, ritual purity, ethical production, and social responsibility. Within Islamic jurisprudence,

determining the permissibility of food involves evaluating multiple interconnected dimensions, including the origin of biological materials, methods of production, the integrity of processing, and broader objectives of Shari'ah. Consequently, cultivated meat represents one of the most challenging contemporary issues confronting Islamic legal scholarship because its production process fundamentally differs from conventional livestock slaughter while simultaneously promising significant societal benefits. Questions concerning the permissibility of stem-cell extraction, culture media, scaffold materials, foetal bovine serum, genetic modification, and industrial manufacturing have generated considerable scholarly debate among Muslim jurists and halal authorities.

Indonesia provides an especially important context for examining these questions. As the world's largest Muslim-majority country, Indonesia faces a dual challenge of ensuring long-term food security while maintaining compliance with Islamic legal and ethical standards. National demand for animal protein continues to increase alongside population growth and improvements in living standards. However, domestic beef production remains insufficient to satisfy national demand, creating persistent dependence on imports despite continuous governmental efforts to strengthen domestic livestock production (Suhada, 2026). Simultaneously, national initiatives such as the *Makan Bergizi Gratis* programme are expected to increase future demand for animal protein, thereby intensifying pressure on existing food production systems. These structural conditions suggest that alternative protein technologies may become increasingly relevant within Indonesia's long-term food policy.

Beyond questions of food security, cultivated meat also intersects with one of the central ethical commitments of Islam: humanity's responsibility as *khalifah* (vicegerent) entrusted with preserving the balance of creation. The Qur'anic worldview consistently emphasises stewardship (*amānah*), ecological balance (*mīzān*), justice (*'adl*), and the avoidance of corruption (*fasād*) on earth. These principles collectively establish a theological foundation for environmental responsibility that has recently been revitalised within the emerging discourse of Islamic eco-theology and *fiqh al-bī'ah*. From this perspective, evaluating food technology cannot be confined to ritual legality alone but must also consider ecological sustainability, responsible resource utilisation, intergenerational justice, and protection of creation as integral components of Islamic moral reasoning. Cultivated meat therefore raises not merely a legal question concerning permissibility but a broader jurisprudential question concerning how Islamic law should respond to transformative technologies capable of reshaping the relationship between humanity, animals, and the natural environment.

The growing academic literature reflects increasing recognition of these issues. Several studies conclude that cultivated meat may be considered permissible provided that the originating cells and production processes satisfy Islamic legal requirements (Junaidi & Asmadin, 2023; Rahmawati, 2023). Other scholars remain considerably more cautious, arguing that the absence of conventional *zabīḥah*, the use of animal-derived culture media, and unresolved biological and spiritual concerns prevent cultivated meat from fulfilling the requirements of *ḥalāl* and *ṭayyib* (Alzeer et al., 2025). Parallel empirical research demonstrates that Muslim consumers generally express willingness to consume cultivated meat only after receiving trustworthy halal certification from recognised religious authorities, indicating that legal legitimacy and consumer confidence remain closely interconnected (Ho et al., 2023; Mohd Kashim et al., 2023).

Although these studies have substantially advanced contemporary discussions, important limitations remain. First, most existing research continues to frame cultivated meat primarily as a binary legal question concerning whether the product is *ḥalāl* or *ḥarām*. Such an approach risks reducing Islamic jurisprudence to a narrow jurisprudence of permissibility while overlooking its broader ethical objectives. Second, relatively little scholarship integrates Islamic environmental ethics into legal analyses of emerging food biotechnology, despite the growing relevance of sustainability within global food governance. Third, while several authors invoke *Maqāṣid al-Shari'ah* as a general justification, few operationalize Jasser Auda's systems theory—which emphasises multidimensionality, openness, interconnectedness, cognitive reasoning, and purposefulness—as a comprehensive analytical framework for evaluating cultivated meat. Finally, little attention has been devoted to reconstructing Islamic legal reasoning in a manner that simultaneously addresses food security, ecological sustainability, technological innovation, and religious legitimacy within a single conceptual framework.

This article argues that the contemporary debate surrounding cultivated meat should move beyond a purely formalistic discussion of halal certification toward a broader reconstruction of Islamic food ethics grounded in the objectives of Shari'ah. Rather than asking merely whether cultivated meat is legally permissible, the more fundamental question concerns whether the technology advances the higher objectives of Islamic law by protecting human life, preserving environmental balance, promoting social welfare, strengthening food resilience, and fulfilling humanity's ethical responsibility toward creation. Addressing this question requires an interpretive framework capable of integrating classical jurisprudence with contemporary scientific knowledge without sacrificing the normative integrity of either tradition.

Accordingly, this study proposes an Eco-Theological Maqāṣid Framework based upon Jasser Auda's systems approach to *Maqāṣid al-Shari'ah*. By integrating Islamic jurisprudence, eco-theology, food ethics, and sustainable governance, the framework seeks to expand contemporary Islamic legal reasoning beyond conventional doctrinal boundaries while remaining faithful to the higher objectives of Shari'ah. The article therefore contributes to three interconnected scholarly conversations. First, it advances Islamic legal theory by operationalising Auda's systems

approach within the context of cellular agriculture. Second, it enriches Islamic bioethics through systematic integration of ecological stewardship and sustainable development into legal reasoning concerning food biotechnology. Third, it offers a conceptual foundation capable of informing halal governance, regulatory development, and future food policy in Muslim-majority societies confronting increasingly complex sustainability challenges.

Literature Review

1. Cultivated Meat and the Transformation of Global Food Systems

Cultivated meat has emerged as one of the most transformative innovations within contemporary food biotechnology, fundamentally reshaping scholarly and policy debates concerning sustainable food production. Unlike conventional livestock farming, cultivated meat is produced through cellular agriculture by proliferating animal stem cells in controlled bioreactor environments, thereby eliminating the need to raise and slaughter entire animals. This production process relies upon the integration of satellite cells or myoblasts, three-dimensional scaffolds, nutrient-rich culture media, growth factors, and tissue engineering techniques to generate muscle tissue that is biologically comparable to conventional meat (Post et al., 2017; Chen et al., 2024). Recent technological advances have significantly improved production efficiency while simultaneously reducing costs, positioning cultivated meat as a promising alternative protein source for the future global food system.

The rapid development of cultivated meat is closely associated with growing international concerns regarding the sustainability of conventional livestock production. Industrial animal agriculture has been identified as a major contributor to greenhouse gas emissions, land degradation, biodiversity loss, excessive freshwater consumption, and zoonotic disease risks (Reddy et al., 2022; Rodríguez Escobar et al., 2021). Consequently, international organisations, governments, and private industries increasingly view cellular agriculture as a strategic component of future food security and climate resilience. Rather than functioning merely as a technological substitute for conventional meat, cultivated meat represents a structural transformation of food production systems capable of redefining the relationship between technological innovation, environmental sustainability, and human nutrition.

From this perspective, cultivated meat should not be understood solely as a scientific innovation but as a governance issue situated at the intersection of biotechnology, environmental policy, ethics, public health, and regulatory institutions. Its emergence raises important normative questions concerning acceptable technological intervention in nature, equitable food distribution, consumer trust, and regulatory legitimacy. These broader governance dimensions become particularly significant within religious societies where food consumption is simultaneously governed by legal, ethical, cultural, and theological norms.

2. Islamic Jurisprudence and the Halal Debate on Cultivated Meat

Within contemporary Islamic legal scholarship, cultivated meat has become one of the most debated issues in food jurisprudence because its production process departs fundamentally from conventional methods of animal slaughter recognised by classical fiqh. Unlike traditional meat production, cellular agriculture challenges long-established legal assumptions regarding the relationship between animal life, slaughter (*zabīḥah*), ritual purity (*ṭahārah*), and lawful consumption (*ḥalāl*). Consequently, determining the legal status of cultivated meat requires reinterpreting classical jurisprudential principles in light of emerging biotechnological realities.

Existing literature demonstrates three major jurisprudential approaches. The first adopts a permissive position, arguing that cultivated meat may be considered halal provided that the originating cells are derived from lawful animals and the entire production process remains free from prohibited substances. Studies by Hossain (2019), Junaidi and Asmadin (2023), and Rahmawati (2023) emphasise that Islamic law has historically accommodated technological innovation when it advances public welfare (*maṣlaḥah*) without violating explicit textual prohibitions. Under this interpretation, biotechnology itself is religiously neutral, while legal evaluation depends upon the origin of biological materials, production methods, and compliance with Sharī'ah principles.

A second group of scholars adopts a more cautious position. Alzeer et al. (2025), for example, contend that cultivated meat has not yet fulfilled the requirements of *ḥalāl* and *ṭayyib* because the production process omits conventional *zabīḥah*, relies upon biologically controversial culture media such as foetal bovine serum, and potentially disconnects meat from its traditional theological and biological context. From this perspective, legal permissibility cannot be determined exclusively through technological capability but must preserve the ethical and spiritual dimensions historically embedded within Islamic dietary law.

A third and increasingly influential perspective shifts attention from binary legal classifications toward broader regulatory governance. Rather than asking merely whether cultivated meat is lawful, scholars working on halal governance argue that institutional oversight, halal assurance systems, certification procedures, traceability, and transparent supply chains constitute equally important determinants of Muslim consumer confidence (Shaharudin et al., 2025; Mohd Kashim et al., 2023). This perspective recognises that halal is not solely a

theological category but also a governance mechanism ensuring integrity throughout the food production chain.

3. Maqāṣid al-Sharī'ah as a Dynamic Framework for Emerging Biotechnology

The growing complexity of contemporary biotechnology has stimulated renewed scholarly interest in *Maqāṣid al-Sharī'ah* as a dynamic interpretive framework capable of extending Islamic legal reasoning beyond literal textual interpretation. Classical formulations of *maqāṣid* focused primarily upon preserving religion, life, intellect, lineage, and property. Contemporary scholars, however, have argued that these objectives should be interpreted dynamically to address evolving social, technological, environmental, and economic realities.

Among contemporary theorists, Jasser Auda has introduced one of the most influential reconceptualisations of *maqāṣid* through his systems approach. Rejecting linear and reductionist legal reasoning, Auda proposes that Islamic law should be understood as an open, multidimensional, cognitive, interconnected, and purpose-oriented system capable of responding adaptively to contemporary societal change. His framework encourages jurists to evaluate legal questions by considering systemic consequences rather than relying exclusively upon analogical reasoning (*qiyās*) or isolated textual analysis.

This systems perspective possesses particular relevance for cultivated meat because the technology simultaneously intersects with environmental sustainability, food security, public health, economic development, consumer protection, technological innovation, and religious legitimacy. Evaluating these interconnected dimensions requires precisely the holistic methodology advocated by Auda. Nevertheless, despite frequent references to *maqāṣid* within cultivated meat literature, relatively few studies operationalise Auda's systems theory as the principal analytical framework. Most invoke *maqāṣid* only as a normative justification rather than employing it as a comprehensive methodology for legal reconstruction. This gap provides one of the principal theoretical motivations for the present study.

4. Eco-Theology and Islamic Environmental Ethics

Parallel to developments within Islamic legal theory, recent decades have witnessed growing scholarly interest in Islamic eco-theology as a normative response to the global environmental crisis. Islamic environmental ethics derives primarily from Qur'anic concepts such as *khilāfah* (vicegerency), *amānah* (trusteeship), *mīzān* (ecological balance), *rahmah* (compassion), and the prohibition of *fasād* (environmental corruption). Collectively, these principles establish an ethical worldview in which environmental stewardship constitutes an essential dimension of religious responsibility rather than an optional moral preference.

Contemporary scholarship argues that Islamic eco-theology provides important conceptual resources for responding to climate change, biodiversity loss, resource depletion, and unsustainable production systems (Islam et al., 2024). Rather than viewing nature merely as an economic resource, Islamic environmental ethics emphasizes reciprocal responsibility between humanity and creation. Consequently, technological innovation should be evaluated according to its contribution toward preserving ecological equilibrium and promoting long-term public welfare.

Despite these developments, eco-theological perspectives remain largely absent from contemporary discussions concerning cultivated meat. Existing scholarship generally focuses upon halal certification, stem-cell origin, slaughter requirements, and production materials, while paying comparatively limited attention to the environmental objectives of Islamic law. Integrating eco-theology therefore expands Islamic legal analysis beyond questions of permissibility toward broader considerations of sustainability, stewardship, and environmental justice.

5. Muslim Consumer Acceptance and Halal Governance

Legal permissibility alone does not guarantee public acceptance of emerging food technologies. Empirical studies consistently demonstrate that Muslim consumers evaluate cultivated meat through a combination of religious commitment, perceived technological risk, trust in regulatory institutions, and halal awareness. Research conducted in Singapore by Ho et al. (2023) indicates that Muslim consumers generally express willingness to consume cultivated meat only when supported by credible halal certification issued by recognized religious authorities. Similar findings have been reported in Malaysia and Indonesia, where religious trust significantly moderates consumer acceptance of food biotechnology.

These findings suggest that halal governance extends beyond legal compliance to encompass institutional credibility, regulatory transparency, consumer education, and public communication. Consequently, future halal governance frameworks must integrate scientific expertise, Islamic jurisprudence, food safety regulation, and stakeholder participation. Such integration becomes increasingly important as food technologies continue to evolve beyond the conceptual assumptions underlying existing halal certification systems.

6. Research Gap and Conceptual Positioning

The literature reviewed above demonstrates that significant progress has been achieved in understanding cultivated meat from scientific, jurisprudential, ethical, and consumer perspectives. Nevertheless, four important gaps remain.

First, most existing studies continue to conceptualize cultivated meat primarily through the binary categories of *halal* and *haram*, thereby overlooking broader objectives of Islamic legal reasoning. *Second*, Islamic environmental ethics has rarely been integrated systematically into legal analyses of cultivated meat despite increasing global concern regarding ecological sustainability. *Third*, although many scholars refer to *Maqāṣid al-Sharī'ah*, few studies operationalise Jasser Auda's systems theory as a comprehensive methodology for evaluating emerging food biotechnology. *Fourth*, there remains no integrated theoretical framework capable of simultaneously connecting Islamic jurisprudence, eco-theology, sustainable food governance, and halal regulatory systems.

Addressing these gaps, the present article proposes an Eco-Theological Maqāṣid Framework that reconstructs Jasser Auda's systems approach for evaluating cultivated meat within contemporary Islamic law. Rather than reducing cultivated meat to a question of ritual permissibility, the proposed framework situates it within the broader ethical architecture of sustainability, environmental stewardship, food justice, and responsible governance. In doing so, the study contributes not only to Islamic bioethics and food jurisprudence but also to the emerging interdisciplinary conversation linking religion, biotechnology, and sustainable development.

Conceptual Framework

1. Toward an Eco-Theological Maqāṣid Framework for Cultivated Meat Governance

The rapid emergence of cultivated meat demonstrates that contemporary food technologies cannot be adequately evaluated through conventional legal classifications alone. While existing Islamic legal scholarship has concentrated primarily on determining whether cultivated meat satisfies the requirements of *ḥalāl* and *ṭayyib*, such an approach remains insufficient for addressing the broader ethical challenges associated with sustainability, environmental degradation, technological innovation, and long-term food governance. The complexity of cellular agriculture requires an analytical framework capable of integrating legal reasoning, ecological responsibility, technological assessment, and public welfare within a unified normative structure.

This study therefore proposes an Eco-Theological Maqāṣid Framework that reconstructs Jasser Auda's systems approach to Maqāṣid al-Sharī'ah as an interdisciplinary model for evaluating cultivated meat. Rather than treating Islamic jurisprudence as a closed legal system concerned solely with determining permissibility, the framework understands Sharī'ah as a dynamic moral system directed toward achieving comprehensive human and environmental wellbeing.

2. The proposed framework integrates three complementary normative dimensions

The first dimension is Islamic jurisprudence, which provides the legal foundations governing lawful food production, ritual purity, halal assurance, and the higher objectives of Sharī'ah. Classical *fiqh* remains indispensable for determining legal legitimacy, yet contemporary food technologies require interpretive methodologies capable of addressing issues that were unknown during earlier periods of Islamic legal development.

The second dimension consists of Islamic eco-theology, particularly the Qur'anic principles of *khilāfah*, *amānah*, *mīzān*, *rahmah*, and the prohibition of *fasād*. These concepts reposition environmental stewardship as a religious obligation rather than merely an environmental preference. Consequently, cultivated meat should be evaluated according to its capacity to reduce ecological degradation, improve resource efficiency, protect biodiversity, and contribute to climate resilience.

The third dimension is sustainable food governance, encompassing food security, technological ethics, consumer protection, regulatory transparency, and long-term policy development. Within this perspective, halal certification represents only one component of a broader governance ecosystem involving scientists, jurists, regulators, industry, and consumers.

At the centre of this framework lies Jasser Auda's systems approach to *Maqāṣid al-Sharī'ah*. Unlike classical linear legal reasoning, Auda conceptualises Islamic law as an interconnected system characterised by cognitive openness, multidimensionality, purposefulness, interrelatedness, and continuous renewal. These characteristics allow Islamic jurisprudence to respond adaptively to emerging technologies without abandoning its normative foundations.

Applying this systems approach enables the five classical objectives of Sharī'ah to be interpreted within contemporary food governance.

- 1) Protection of Religion (*ḥifẓ al-dīn*) ensures that cultivated meat complies with Islamic ethical principles,

halal governance, and responsible technological innovation.

- 2) Protection of Life (*hifẓ al-nafs*) extends beyond food safety to encompass nutritional security, zoonotic disease prevention, and equitable access to healthy protein sources.
- 3) Protection of Intellect (*hifẓ al-'aql*) encourages scientific innovation while ensuring that technological development remains ethically accountable.
- 4) Protection of Lineage (*hifẓ al-nasl*) includes safeguarding future generations through environmentally sustainable food production systems.
- 5) Protection of Wealth (*hifẓ al-māl*) supports efficient resource utilisation, economic resilience, and sustainable agricultural transformation.

This reconstruction expands the classical maqāṣid paradigm by explicitly incorporating ecological sustainability and intergenerational justice as integral components of contemporary Islamic legal reasoning. Rather than introducing entirely new objectives, the framework demonstrates that environmental stewardship naturally emerges from the systemic interaction among the existing objectives when interpreted through Auda's methodology.

Accordingly, the Eco-Theological Maqāṣid Framework conceptualizes cultivated meat not merely as a halal product but as a multidimensional governance issue situated at the intersection of Islamic jurisprudence, environmental ethics, biotechnology, and sustainable development. This perspective provides a more comprehensive analytical basis for evaluating emerging food technologies within Muslim societies.

Method

This study employed a qualitative doctrinal legal research design integrated with philosophical inquiry and conceptual analysis to reconstruct an Islamic legal framework for evaluating cultivated meat within the broader objectives of sustainable food governance. Doctrinal legal research was considered appropriate because the primary objects of inquiry consisted of legal concepts, Islamic jurisprudential doctrines, fatwas, normative principles, and contemporary scholarly interpretations concerning cultivated meat rather than empirically measurable behavioural phenomena. In this approach, legal materials are examined systematically to identify, interpret, and reconstruct the principles underlying a particular field of law (Hutchinson & Duncan, 2012). The doctrinal dimension was complemented by philosophical inquiry to examine the epistemological foundations of Islamic environmental ethics and the normative implications of Jasser Auda's systems approach to *Maqāṣid al-Sharī'ah*. Auda's framework is particularly relevant because it conceptualises *maqāṣid* through a systems-oriented perspective characterised by multidimensionality, openness, cognition, interrelatedness, and purposefulness, thereby enabling Islamic legal reasoning to engage more adequately with complex contemporary problems (Auda, 2008). Accordingly, the methodology combined legal interpretation, philosophical reflection, and conceptual reconstruction to develop a coherent framework for assessing cultivated meat within the intersecting domains of Islamic law, biotechnology, environmental ethics, and sustainable food governance.

The study relied exclusively on qualitative documentary materials derived from primary and secondary sources. Primary sources included the Qur'an, authenticated Hadith, classical works of Islamic jurisprudence relevant to food law and *Maqāṣid al-Sharī'ah*, as well as contemporary fatwas and halal guidelines addressing cultivated meat and emerging food biotechnology. Secondary sources consisted of peer-reviewed journal articles, academic books, reports issued by international organisations, scientific literature on cellular agriculture, and scholarly publications addressing Islamic bioethics, food governance, environmental ethics, and sustainability. Documentary analysis was employed because it enables systematic examination and interpretation of textual materials in order to generate meaning, develop thematic categories, and construct conceptual understanding (Bowen, 2009). The integration of jurisprudential and scientific materials was necessary because the legal evaluation of cultivated meat cannot be undertaken solely through classical legal categories without considering the technological processes, biological materials, environmental consequences, and governance challenges associated with cellular agriculture.

The analytical procedure was conducted through several interconnected stages. First, contemporary literature on cultivated meat was systematically reviewed and classified according to major analytical themes, including technological development, sources of cellular material, halal governance, environmental sustainability, Islamic bioethics, and food security. Second, doctrinal analysis was undertaken to identify the legal principles and modes of reasoning employed in contemporary Islamic discussions concerning the permissibility of cultivated meat. Particular attention was given to questions concerning the origin and purity of cells, growth media, transformation of biological substances, avoidance of harm, preservation of life, and public benefit. Third, the study applied Auda's systems approach to *Maqāṣid al-Sharī'ah* as its principal interpretive lens. Rather than treating individual objectives of the Sharī'ah as isolated categories, the analysis examined their multidimensional and interdependent relationships in addressing contemporary food biotechnology (Auda, 2008). This approach enabled the study to move beyond a binary halal-haram assessment and to consider broader questions of ecological responsibility, human welfare, technological ethics, food security, and long-term sustainability.

The data were analysed using qualitative content analysis in combination with doctrinal interpretation and comparative legal reasoning. Qualitative content analysis was used to organise textual materials into analytically meaningful categories and to identify recurring normative patterns across jurisprudential, theological, scientific, and environmental sources (Schreier, 2012). The analysis proceeded iteratively rather than mechanically. Relevant materials were first coded according to major themes, after which jurisprudential arguments concerning cultivated meat were compared to identify areas of convergence, divergence, and unresolved conceptual tension. Comparative legal reasoning was then employed to evaluate differences among existing Islamic legal positions, particularly regarding the status of source cells, culture media, processes of transformation, contamination, necessity, public interest, and potential harm. This comparative stage was followed by conceptual reconstruction, through which the systems approach to *Maqāṣid al-Sharī'ah* was synthesised with Islamic environmental ethics to formulate the proposed Eco-Theological Maqāṣid Framework. The reconstruction sought to identify normative convergence among the objectives of Sharī'ah, ecological stewardship, technological responsibility, public welfare, and sustainable food governance.

The credibility and analytical consistency of the study were strengthened through triangulation across legal, theological, scientific, and environmental sources. Rather than relying on a single disciplinary perspective, legal interpretations were continuously compared with contemporary developments in biotechnology, Islamic jurisprudence, environmental ethics, and sustainability governance. This cross-disciplinary triangulation was employed to minimise one-dimensional interpretation and to ensure that the proposed framework remained simultaneously grounded in Islamic normative reasoning and responsive to the technological realities of cultivated meat. Consistency was further maintained through continuous comparison between classical jurisprudential principles and contemporary scholarly discussions. Through this procedure, the study did not merely catalogue or compare existing legal opinions but sought to construct a theoretically integrated model capable of informing future halal governance and sustainable food policy. The resulting Eco-Theological Maqāṣid Framework therefore represents a normative and conceptual reconstruction derived from the interaction between Islamic legal doctrine, systems-based *maqāṣid* reasoning, environmental ethics, and contemporary food biotechnology.

Results and Discussion

1. Reframing Cultivated Meat Beyond the Halal–Haram Dichotomy

The contemporary debate surrounding cultivated meat has largely been dominated by a jurisprudential question concerning whether the product should be classified as ḥalāl or ḥarām. Although this question is undeniably important within Islamic legal discourse, reducing the discussion to a binary legal classification risks oversimplifying the multidimensional ethical challenges posed by emerging food biotechnology. Islamic law has never functioned merely as a mechanism for distinguishing lawful from unlawful conduct. Rather, its broader objective has always been to realise justice, public welfare (maṣlaḥah), and the protection of human dignity through a dynamic legal system responsive to changing social realities.

Existing scholarly debates illustrate this limitation. Jurists supporting the permissibility of cultivated meat generally emphasise the lawful origin of stem cells and compliance with halal production processes, whereas more cautious scholars stress the absence of conventional zabīḥah, the use of foetal bovine serum, and unresolved theological concerns regarding the biological identity of laboratory-grown meat. Both perspectives contribute valuable legal insights; however, they share a common assumption that the central issue concerns ritual legality alone. This assumption leaves relatively unexplored broader questions concerning environmental sustainability, food justice, technological responsibility, and intergenerational welfare.

From the perspective of contemporary Islamic legal theory, cultivated meat should instead be understood as a systemic governance issue. Its production influences multiple dimensions simultaneously, including climate resilience, biodiversity conservation, animal welfare, public health, food affordability, and technological equity. These interconnected consequences cannot be adequately evaluated through isolated legal analogies. Consequently, the jurisprudential challenge is not simply whether cultivated meat satisfies existing legal categories but whether those categories themselves require methodological reconstruction in light of contemporary realities.

This reframing reflects a broader evolution within Islamic jurisprudence from rule-centred reasoning toward objective-centred reasoning. Rather than beginning with isolated legal prohibitions, the analysis starts from the higher purposes of Sharī'ah and evaluates whether a technological innovation advances or undermines those objectives. Such an approach remains faithful to classical Islamic legal methodology while recognizing that emerging technologies often present circumstances unknown to earlier jurists. In this sense, cultivated meat becomes an important test case for examining the adaptive capacity of Islamic law in responding to twenty-first-century scientific innovation.

2. Reconstructing Jasser Auda's Systems Approach for Food Biotechnology

One of the principal contributions of Jasser Auda's theory of *Maqāṣid al-Sharī'ah* lies in its rejection of reductionist legal reasoning. Rather than conceptualizing Islamic law as a closed collection of legal rulings, Auda proposes a systems approach characterized by multidimensionality, openness, interconnectedness, cognitive reasoning, purposefulness, and continual renewal. This perspective recognizes that contemporary legal problems frequently arise from complex interactions among technological, economic, environmental, political, and ethical factors that cannot be analyzed independently.

Cultivated meat exemplifies precisely this type of complexity. Determining its legal status requires simultaneous consideration of cellular biology, tissue engineering, halal assurance, environmental science, consumer behavior, public policy, and theological ethics. A purely textual or analogical approach therefore risks overlooking systemic consequences that constitute essential components of Islamic public welfare.

Applying Auda's systems approach transforms the legal analysis in several important ways. First, the question of halal shifts from a narrow inquiry into production procedures toward a comprehensive evaluation of the entire food system. Second, legal reasoning becomes multidisciplinary, incorporating scientific evidence alongside classical jurisprudence without subordinating one to the other. Third, the assessment of public welfare expands beyond immediate consumer interests to include long-term environmental sustainability and the rights of future generations.

This reconstruction demonstrates that *Maqāṣid al-Sharī'ah* should not function merely as a justificatory principle invoked after legal conclusions have already been reached. Instead, it operates as the primary analytical methodology guiding legal reasoning from the outset. Such an interpretation aligns with Auda's insistence that Islamic law must remain intellectually open while preserving its normative integrity.

3. Eco-Theological Dimensions of Sustainable Food Governance

The integration of Islamic eco-theology substantially expands the ethical horizon of contemporary food jurisprudence. Qur'anic concepts such as *khilāfah*, *amānah*, and *mīzān* establish humanity's responsibility not only to utilize natural resources but also to preserve ecological balance for present and future generations. Within this worldview, environmental stewardship constitutes an act of religious obedience rather than a purely secular environmental concern.

Conventional livestock production has become increasingly associated with greenhouse gas emissions, extensive land conversion, freshwater depletion, and biodiversity loss. These environmental consequences raise important questions regarding the compatibility of existing food systems with Islamic ethical commitments to justice, moderation, and responsible stewardship. Cultivated meat cannot automatically be regarded as environmentally superior in every context, as its overall sustainability depends on factors such as energy sources, production efficiency, and industrial scale. Nevertheless, if lifecycle assessments demonstrate meaningful reductions in ecological harm, then these environmental benefits become morally relevant within the objectives of *Sharī'ah*.

This perspective also redefines the concept of *maṣlaḥah*. Traditionally understood as the promotion of public welfare, *maṣlaḥah* may be interpreted in contemporary settings to include climate resilience, biodiversity protection, responsible resource management, and sustainable food security. Such an interpretation does not represent a departure from classical jurisprudence but rather its contextual application to challenges that earlier jurists could not have anticipated.

Consequently, eco-theology functions not as an external addition to Islamic law but as an interpretive lens that reveals environmental stewardship already embedded within the objectives of *Sharī'ah*.

Conclusion

The emergence of cultivated meat represents a transformative development in contemporary food biotechnology that challenges the epistemological boundaries of classical Islamic jurisprudence. This study has demonstrated that evaluating cultivated meat solely through the binary categories of *ḥalāl* and *ḥarām* is insufficient to address the complex ethical, environmental, technological, and governance issues associated with cellular agriculture. As food systems become increasingly interconnected with sustainability, climate change, and global food security, Islamic legal reasoning must also evolve beyond narrow doctrinal formulations toward a more holistic and purpose-oriented interpretive framework.

By reconstructing Jasser Auda's systems approach to *Maqāṣid al-Sharī'ah*, this article argues that Islamic jurisprudence possesses the methodological flexibility required to engage constructively with emerging food technologies while preserving its normative integrity. The integration of multidimensional legal reasoning with the eco-theological principles of *khilāfah*, *amānah*, *mīzān*, and *raḥmah* demonstrates that environmental stewardship, ecological sustainability, and intergenerational justice are not external additions to Islamic law but inherent expressions of its higher objectives. Consequently, the legal evaluation of cultivated meat should extend

beyond questions of ritual permissibility to encompass its contribution to human wellbeing, environmental preservation, ethical innovation, and sustainable food governance.

The principal theoretical contribution of this study is the development of an Eco-Theological Maqāṣid Framework that systematically integrates Islamic jurisprudence, environmental ethics, biotechnology, and sustainable governance into a coherent analytical model for assessing emerging food technologies. Unlike previous studies that primarily focused on halal certification or isolated jurisprudential debates, this framework repositions cultivated meat within the broader ethical architecture of Maqāṣid al-Sharī'ah and demonstrates how systems-oriented Islamic legal reasoning can respond to scientific innovation without sacrificing theological authenticity. The framework therefore contributes not only to contemporary Islamic legal theory but also to the expanding interdisciplinary fields of Islamic bioethics, sustainable food ethics, and environmental governance.

Beyond its theoretical significance, the proposed framework offers practical implications for policymakers, halal certification authorities, regulatory institutions, food industries, and Muslim societies confronting the challenges of future food security. The findings suggest that the governance of cultivated meat should incorporate integrated standards encompassing halal compliance, food safety, scientific transparency, environmental sustainability, ethical accountability, and public participation. Such a multidimensional governance model would strengthen public trust while ensuring that technological innovation remains aligned with the higher objectives of Islamic law and the broader aspirations of sustainable development.

Nevertheless, this study is subject to several limitations. As a doctrinal and conceptual analysis, it does not empirically examine consumer behaviour, institutional implementation, lifecycle environmental performance, or the regulatory readiness of Muslim-majority countries. Future research may therefore extend the proposed framework through comparative analyses of national halal governance systems, empirical investigations of Muslim consumer acceptance, environmental lifecycle assessments of cultivated meat production, and interdisciplinary collaborations involving Islamic jurists, food scientists, environmental experts, and public policymakers. Such studies would further refine the Eco-Theological Maqāṣid Framework and strengthen its applicability to the governance of future food technologies.

In conclusion, this article argues that the future of Islamic food jurisprudence should not be framed merely as a debate over the permissibility of cultivated meat, but as an opportunity to reconstruct Islamic legal thought in response to the ethical demands of the twenty-first century. Through the integration of Jasser Auda's systems approach, Maqāṣid al-Sharī'ah, and Islamic eco-theology, Islamic law can provide a comprehensive normative foundation for sustainable food governance that promotes human welfare, environmental responsibility, and technological innovation simultaneously. In this respect, cultivated meat should be understood not simply as a new food product, but as a catalyst for the renewal of contemporary Islamic jurisprudence in addressing the evolving relationship between religion, science, and sustainability.

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