



Food and Agriculture  
Organization of the  
United Nations



World Health  
Organization

# Cell-based food in the context of the Near East region

Report of the side event to the 11th Session  
of the FAO/WHO Coordinating Committee  
for the Near East (CCNE11), Rome, Italy,  
21 September 2023







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# Contents



<b>Acknowledgements</b>	iv
<b>Abbreviations</b>	iv
<b>Executive summary</b>	v
<b>1. Introduction</b>	1
<b>2. Opening remarks</b>	1
<b>3. FAO/WHO Activities: an overview</b>	1
<b>4. Regional perspectives: the result of the pre-event survey</b>	2
<b>5. Discussion session</b>	3
5.1. Current regulatory situations	3
5.2. Regulatory challenges	4
5.3. Regional collaborative opportunities	4
5.4. Voices from Members	5
<b>6. Closing remarks</b>	6
<b>7. A way forward</b>	6

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## Abbreviations

### CCNE

FAO/WHO Coordinating Committee for the Near East

### SFDA

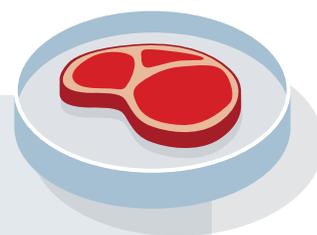
Saudi Food and Drug Authority

### FAO

Food and Agriculture Organization of the United Nations

### WHO

World Health Organization



# Executive summary

On 21 September 2023, the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) held a hybrid meeting as a side event to the 11th Session of the FAO/WHO Coordinating Committee for the Near East (CCNE11) in Rome, Italy, on the topic of food safety aspects of cell-based within the context of the Near East region. A total of 53 participants attended the event, which provided a unique opportunity for the participants to discuss the topic and its relevance to the Codex work in the specific regional context. The event highlighted the international activities that FAO and WHO have conducted so far, and the results of the pre-event survey about current regulatory situations for cell-based food in the region. One of the main outcomes of the discussion was the recognition of the usefulness of information exchange on cell-based food among Codex Members. Many CCNE delegates stressed that public awareness of cell-based food is essential for moving forward; however, they pointed out that at present the general public's knowledge of cell-based food is limited. Regulators should therefore provide the public with accurate scientific information, drawing on international technical assistance from FAO and WHO to make the scientific communication more effective. Several suggestions for concrete regional collaborative activities, such as exchange mechanisms of regulatory information, were put forward and the meeting ended on a positive note.

**Keywords:** food safety, cell-based food, regulatory framework, Near East, risk assessment, hazard identification, regional collaboration, Codex Alimentarius



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## 1. Introduction

On 21 September 2023, the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) held a hybrid meeting as a side event to the 11th Session of the FAO/WHO Coordinating Committee for the Near East (CCNE11) in Rome, Italy, to discuss food safety aspects of cell-based in the context of the Near East region. The event was conducted with simultaneous interpretations in Arabic, English and French, and an online platform was made available for remote participants to make interventions. A total of 53 participants (18 in-person and 35 online participants) attended the event.

## 2. Opening remarks

The meeting was opened by Ms Masami Takeuchi, FAO Food Safety Officer, on behalf of Mr Markus Lipp, FAO Senior Food Safety Officer. Ms Takeuchi drew attention to a recent publication by FAO and WHO on the topic of cell-based food and pointed out that this could be a unique opportunity for the participants to discuss it, considering its relevance to the Codex work as well as in the context of the Near East region.

Having emphasized that the CCNE plays an important role in ensuring food safety in the region, she stressed that active participation by every single delegate furthers the objectives of the Codex Alimentarius. As the topic of cell-based food is relatively new, the perspective of every country matters, and the opinions voiced at the side event will contribute to shaping the global view on the topic. At the same time, FAO and WHO are committed to supporting Members by providing technical and policy assistance to achieve Member-driven food safety objectives.

## 3. FAO/WHO Activities: An overview

Following the opening remarks, Ms Takeuchi gave an overview of the relevant FAO/WHO activities addressing the food safety aspects of cell-based foods to date, as illustrated by a timeline reaching back to 2017.

She started by pointing out that an in-depth literature synthesis dealing with three topics – production process, terminology and regulatory frameworks – was produced by FAO, and that four generic phases for cell-based food production used in the hazard identification were presented, namely cell sourcing, production, harvesting and processing. She shared the link to an animation video that FAO made to further the understanding of how cell-based food is produced (FAO, 2023a). With regard to nomenclature, she identified various terms, such as “cultured meat”, “cultivated meat”, “cellular agriculture”, and “cell-based food”, which have been used to designate this specific type of food or food production process. She explained that the group of experts working with FAO and WHO has for the time being agreed to use “cell-based food” as a working terminology, while remaining open to suggestions from Codex members prior to settling on a definitive term. When it comes to regulatory frameworks, FAO has examined the regulatory situations of ten countries, of which three country case studies have been included in the document.

As food safety is one of the chief regulatory considerations, many competent food safety authorities expressed the need for global guidance on how to conduct a risk assessment of the products. With this in mind, in 2021 FAO formed an informal Technical Working Group (TWG) consisting of regulatory experts from the public sector, and at present, the TWG has 35 experts from over 16 agencies in more than 13 countries. The TWG members informally discuss the activities they are conducting with regard to cell-based food and the issues they are facing. With WHO joining the TWG in 2023, the group covered various relevant topics, including precision fermentation, so that members could inform FAO/WHO of their wishes for international organizations' actions.

Ms Takeuchi informed participants that an FAO-led expert consultation was held in Singapore in November 2022 with a view to conducting a comprehensive hazard identification of cell-based food production, as the first step in a formal food safety risk assessment process. This has resulted in the FAO/WHO publication titled Food safety aspects of cell-based food (FAO and WHO, 2023a), listing more than 40 potential hazards and explaining their respective possible causal chains. This 150-page publication contains comprehensive information, including the above-mentioned literature synthesis, for competent authorities to use as a technical reference. Concurrently, FAO and WHO produced a short factsheet available in six languages, which is a four-page summary of the main publication (FAO and WHO, 2023b).

In addition, FAO has been actively organizing stakeholder meetings that engage with this topic. The first one, held in Israel in 2022 (FAO, 2023b), gave various developers and researchers the opportunity to discuss their products and the relevant food safety assurance practices. The second stakeholder meeting in the series was planned to take place in China in 2023, followed by the third meeting in Canada in 2024. The last two meetings have a wider scope, intending to cover both cell-based food production and precision fermentation. Holding the series can foster a collaborative environment among regulators, private sector developers and academic researchers, allowing for their respective needs and challenges to be identified and potentially addressed at the global level.

## 4. Regional perspectives: The results of the pre-event survey

Prior to the side event, an online survey was conducted with the Codex delegates from the region to understand the current perspectives on the topic of cell-based food from the members in the region. Ms Juliana De Oliveira Mota, WHO Technical Officer, reported that 17 responses from 14 countries (Bahrain, Egypt, Iraq, the Islamic Republic of Iran, Jordan, Libya, Oman, Qatar, Saudi Arabia, Sudan, the Syrian Arab Republic, Tunisia, United Arab Emirates and Yemen) were received.

All the respondents thought cell-based food production was a completely new process, and that regulators needed to learn about the process to understand the attendant food safety issues. Terminology was considered to be a significant topic and, while ten people felt comfortable using the FAO/WHO provisional term of "cell-based food", others thought that further research and a stakeholder consultation at the national level were needed to

determine the appropriate terminology. One respondent drew attention to the importance and mandatory nature of Halal rules for Muslims, and thought that the relevant policies also needed to take into account religious considerations.

The majority of respondents (15 out of 17) concurred that people in their respective countries were not familiar with the concept of cell-based food and all respondents regarded food safety aspects, including allergenicity, to be very important issues for the CCNE delegates to consider. In addition, many respondents stated that concerns of regional relevance such as Halal regulations were important to discuss in a collaborative approach. A need for clear definitions of the relevant terminology and regulatory actions within food safety policies were also singled out as important areas of work for CCNE members.

## 5. Discussion session

### 5.1. Current regulatory situations

Several CCNE delegates, including those from Qatar, Saudi Arabia and the United Arab Emirates, reported that they have taken proactive steps to initiate regulatory discussions on cell-based food. Those from Egypt, the Islamic Republic of Iran, Oman, Sudan and Yemen also stated that they were at an early stage of the process and that they planned to consult key stakeholders so that a proper evaluation could be carried out in order to decide what regulatory actions were necessary. Many participants also found the exchange of technical information on cell-based food to be useful, and that sharing regulatory good practices can be potentially helpful for many countries, particularly those with Muslim populations, as specific, regionally relevant topics, such as the Halal status, can be discussed in common.

Country representatives concurred that acquiring knowledge about the production methodologies and safety assessment requirements is important. Delegates from Egypt, Qatar, Saudi Arabia and the United Arab Emirates declared that they focused on strengthening their technical capacity so as to conduct relevant food safety assessments with a view to setting up a regulatory approval system. Some stated that this could potentially help to improve access to international markets, thus fulfilling one of the Codex objectives, that of trade facilitation. Delegates from Oman, Sudan, the Syrian Arab Republic and Yemen reported that improving laboratory capacity in order to properly assess the safety of the products is among the priorities for their respective countries.

For all the CCNE members, raising public awareness of cell-based food is important. Consumer acceptance of cell-based food is key and authorities must be able to address any concerns consumers may raise. As is always the case with new technologies, misconceptions about cell-based food may emerge and regulators will need accurate technical information as well as relevant communication strategies to draw on. Some members said that cell-based food may raise ethical concerns in the region. In the Near East, where dietary practices are closely connected to cultural and religious beliefs, it is useful to consider how cell-based food would fare in that context. While everyone agreed that discussions as to whether cell-based meat is considered Halal or not need to be settled, this is something for specific Halal authorities to pronounce on, and not for Codex-related food safety officials.

## 5.2. Regulatory challenges

The CCNE delegates considered terminology to be one of the major regulatory challenges since it has a direct bearing on specific regulations; for example, if the term “meat” is employed, then the relevant “meat and meat product regulations” need to be followed. Using names of commodities such as “meat” for cell-based food is thus best avoided in certain countries, especially when the relevant regulations have to do with its Halal status. In those countries, a consultation and an exchange of information between religious authorities, regulators and stakeholders need to be conducted to find the appropriate nomenclature for cell-based food. In addition, harmonizing the nomenclature of cell-based food in the countries in the Near East was deemed potentially useful by a few delegates, who thought it would facilitate trade in the region and reduce consumer confusion as the labelling in the region became consistent.

Some delegates brought up as an additional regulatory challenge not receiving any applications for approval, at least in the next few years. There are many start-up companies around the world developing cell-based food, but only a few countries in the region have had any contact with them. Many companies consider that the region is not at present fully ready to start accepting product applications, possibly because they think that the requirements and regulatory frameworks in place are not yet clear. The fact that there are no actual examples and applications for regulators to assess may explain the limited knowledge and understanding of the latest technological information in the region. Access to up-to-date information and data concerning the food safety aspects of cell-based food is crucial for the competent food safety authorities, and the CCNE delegates thought that FAO and WHO would play an important role in this.

## 5.3. Regional collaborative opportunities

The CCNE members identified several opportunities for collaboration during the discussion session: 1) the sharing of regulatory experiences; 2) regional events engaging stakeholders; 3) regional technical meetings and 4) active knowledge sharing. On the first point, a few countries in the region have already initiated regulatory discussions to establish a framework, and such experiences can be shared within the region to help other countries work out an effective framework needed to ensure the safety of cell-based food. The country case studies presented in the FAO/WHO publication are good examples illustrating the possible options for such effective frameworks, and Qatar’s case in particular has been inspiring regulatory ideas in the region. Regarding the second point, some companies may be interested in exploring regional market opportunities, and giving such stakeholders the opportunity to discuss their products in the region would benefit those regulators who are keen to gain first-hand and up-to-date knowledge of the technology and the way that it can be applied to food. As for the remaining points, members evoked the possibility of holding a joint initiative to discuss the cell-based food technology, production processes, potential food safety hazards, as well as the relevant food safety assessment approach and risk management options. Such an initiative would allow many region-specific issues to be discussed, and it would be welcomed by those countries who are looking to explore the possibilities for a common approach to regulatory actions in the region.

## 5.4. Voices from members

- **Islamic Republic of Iran:** “We still have a lot of unknown issues about this product. We need to understand what capacity is required for proper food safety assessment, and in order to achieve this aim, international assistance is necessary. We also need to raise public awareness of cell-based food. Promoting information exchange and collaboration among Codex members are needed.”
- **Oman:** “We need more studies and information in order to ensure the safety of cell-based foods.”
- **Qatar:** “In Qatar we set up a scientific council consisting of the subject-matter experts. The scientific council holds a range of meetings and sets out a timeline to provide advice for the regulatory decisions.”
- **Saudi Arabia:** “We have sufficient technical capacity to evaluate food safety aspects of cell-based food. To elaborate, there is a procedure for the scientific evaluation process summarized in the *Guidelines for submitting requests for approval of novel foods* published on the SFDA’s website. This guide includes the requirements that must be met for scientific evaluation when requesting approval to register a product as a novel food.”
- **Sudan:** “We need to know many things about cell-based food, and the cost of production, food safety, nutritional information are very important to know in order to meet our food security goals. We should organize a global or regional discussion to make sure that all these details are looked at and that none of this is problematic for the consumers or for the countries concerned.”
- **United Arab Emirates:** “The United Arab Emirates drafted some regulations concerning new types of food. Cell-based foods are beginning to be sold in a few countries in the world already, so although products have not reached in our country, it is a matter of time. So, we are organizing discussions, debates concerning the food safety and nutritional health aspects of these foods and we’re working together with the national body which is responsible for this type of products while we’re trying to strengthen the capacities of the research labs, who will be looking at these types of food as well.”
- **Yemen:** “We would like to initiate the regulatory discussions. Technical capacity development is a must in our government, therefore regional collaborations and international technical assistance are always welcome to improve our regulatory capacity.”

## 6. Closing remarks

Mr Moez Sanaa, Unit Head of Standards and Scientific Advice on Food and Nutrition at WHO, concluded the session with some closing remarks, expressing gratitude for the interest in this innovative subject demonstrated by various nations. He highlighted the pressing issue of providing healthy diets to a world where three billion people are not able to secure enough food. He explained that, although nutrients in food of animal origin are important elements in a balanced diet, we are far from achieving equal access to such nutrients for everyone. The research and development of cell-based food is growing, yet challenges persist when it comes to scaling up production. As more information about

the production processes and options becomes available, there is a need to update the scientific understanding of this technology so that safety assessments can be conducted accordingly. It is also important for the competent authorities to be able to manage cell-based food according to their respective policies and regulations, including those concerning nutrition and labelling. Mr Saana noted the sensitivity of Halal-related issues and suggested that providing a scientific basis on food safety and nutrition would be helpful for the religious authorities tasked with addressing this matter. He concluded his remarks by saying that the aim of the work by FAO and WHO on food safety is not to hinder innovation but to collaborate in developing an effective mechanism that protects consumer health and facilitates international trade. FAO and WHO will continue to gather relevant information and knowledge, so that members can use them to make informed regulatory decisions.

## 7. A way forward

The CCNE11 side event on cell-based food led to a fruitful discussion highlighting the regulatory status of cell-based food in the Near East region. One of the meeting's main outcomes was a recognition of the usefulness of information exchange on cell-based food among Codex members. While many delegates agreed that public awareness of cell-based food is essential to moving forward, they pointed out that the general public's knowledge of cell-based food is at present limited. This is why it is vital for regulators to provide accurate scientific information, which can be achieved with the international technical assistance from FAO and WHO, helping to make the scientific communication more effective. Many CCNE countries expressed their desire to join the technical working group established by FAO and WHO. They are eager to deepen their understanding of the regulatory environment for cell-based food around the world, and would like to move forward with setting up appropriate food safety assessment procedures. Several concrete regional collaborative activities were proposed and the meeting ended on a positive note.

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Russian: <https://youtu.be/E9kcKadp5Bo>; Chinese: <https://youtu.be/dZFknqkctol>).

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Agrifood Systems and Food Safety Division – Economic and Social  
Development Stream

**Food and Agriculture Organization of the United Nations**  
Rome, Italy

Department of Nutrition and Food Safety

**World Health Organization**  
Geneva, Switzerland