

AKADEMIC YEAR	GRADUATES	TITLE	SUPERVISOR	ABSTRACT
<b>2024 - 2025</b>				
15/11/2024	LEIVADITOU CRYSOULA	<b>Incidence of Salmonella in different poultry and poultry products</b>	BOZIARIS IOANNIS	Poultry meat is often associated with contamination issues related to salmonella, which is found in the gastrointestinal tract of live poultry. Contamination of the meat can occur during slaughter and processing. This study aimed to estimate the prevalence of Salmonella in different types and kinds of poultry meat. Data was collected from studies available on Scopus, PubMed, Google Scholar, and ScienceDirect, with a prerequisite that they be quantitative, providing clear numerical results to allow for comparison. These studies reported the exact number of poultry meat samples tested for Salmonella presence, as well as the precise number of salmonella-positive samples. They also detailed the type of poultry (chicken, turkey, or duck) from which the samples originated, whether the samples were from whole carcasses, meat cuts, or ground meat, and the preservation type of the samples (fresh, chilled, or frozen). Results indicated that the highest prevalence of Salmonella in poultry meat was found in chicken meat, followed by turkey meat, while data for duck meat were insufficient for conclusive analysis. The primary reason for the higher prevalence in chicken meat is the increased population density in chicken farms, which leads to a greater transmission of salmonella at the farm level compared to turkeys. Whole poultry carcasses show a lower prevalence of salmonella compared to meat that has been ground or cut into pieces. Ground meat exhibits the highest prevalence of Salmonella, while among poultry meat cuts, those containing skin and thigh pieces have the greatest frequency of contamination. Salmonella prevalence is also higher in chilled meat compared to fresh meat. The cooling method plays a decisive role, as the immersion chilling method increases cross-contamination between carcasses. Keywords: Salmonella spp., poultry, chicken, turkey, cutting, grinding, fresh, refrigeration
15/11/2024	BERTSIMAS DIMITRIOS	<b>Food safety incidents associated with foodborne Clostridium genera and their control strategies: a systematic review and meta-analysis</b>	KAKAGIANNI MYRSINI	Foodborne pathogens constitute a major global public health challenge, causing a wide range of diseases and outbreaks that can lead to serious health consequences and economic losses. Among these pathogens, Clostridium species, particularly Clostridium perfringens and Clostridium botulinum, are notable for their ability to cause severe outbreaks. These bacteria can thrive in improperly handled or stored food, leading to conditions such as food poisoning and botulism. This paper explores the epidemiology, detection and management of foodborne pathogens, with a focus on Clostridium outbreaks in different foods. It highlights the mechanisms by which Clostridium species contaminate food, the challenges in detecting these pathogens, and the importance of robust surveillance, rapid response strategies, and advanced detection methods to mitigate outbreaks. A systematic literature review was performed using PubMed, Scopus, Google Scholar, Clinical trials.gov databases using appropriate keywords 'foodborne disease', 'clostridium infections' 'management strategies' and inclusion and exclusion criteria. The search yielded 23 studies that met the inclusion and exclusion criteria. Of these, 12 studies were on C. botulinum, 8 on C. perfringens and 3 on C. difficile. The results showed that pandemics have occurred in all countries, however C. botulinum was prevalent in American and Asian countries while C. perfringens was more prevalent in European countries. C. difficile was not as strongly associated with pandemics as with random sampling controls. Regarding containment strategies in most studies, they involved control of handling and storage conditions and removal of contaminated products. In some cases, other cases were also traced. In this context, understanding the factors that contribute to Clostridium outbreaks and improving detection and response strategies is critical to enhancing food safety and protecting public health. It is also important for the management of the situation to inform the involved bodies about the correct handling of food and its preservation.
15/11/2024	RISVAS PANAGIOTIS	<b>Meta-analysis of studies on the presence of Campylobacter jejuni in poultry and their products</b>	BOZIARIS IOANNIS	This paper focuses on a meta-analysis of research conducted in countries across almost all of Europe (where information was available to support the methodology of the paper) using data from various years, as close as possible to recent figures, to analyse the presence of Campylobacter jejuni and Campylobacter spp. in poultry. This analysis spans from the farm level, to the slaughterhouse (primary processing), to secondary processing in poultry meat processing units, and finally to poultry products at the retail market level, utilizing European data. The research data were gathered and analysed from official online data sources, primarily focusing on European countries, without excluding other cases. The analysis of contamination rates throughout the production chain (slaughterhouse and processing units) and retail market reveals alarmingly high rates, especially in primary and secondary processing, where skin-on thighs and neck skin exhibit the highest contamination rates in chicken products. This situation is linked to the slaughtering and cutting processes, as well as the physical structure of the meat, which facilitates cross-contamination. During processing, unpackaged products also show high contamination rates, with particular concern for skin-on thighs, wings, minced meat, feet, carcasses, liver, and, to a lesser extent, breast meat. In the market, unpackaged chicken reflects the impact of cross-contamination conditions before storage, while packaged products also show significant contamination rates, indicating issues related to mechanical or manual processing and storage temperature prior to packaging. Special attention is needed for minced meat products and their preparations (burgers, sausages), which exhibit high contamination rates due to the mincing of meat pieces from the entire carcass, remaining vulnerable to cross-contamination. Although fillets show lower contamination rates, they remain dangerous due to cutting surfaces and improper handling of processing machinery and tools. Significant contamination is observed in mechanically separated meat, marinated products, fondue, and carcass meat. Skinless meat parts show relatively lower rates, while chicken nuggets have the lowest presence of contamination among all the aforementioned products. Conversely, turkey and duck products show minimal contamination, as does frozen meat compared to chilled meat. Significant contamination is found in farmed wild game, such as mallards and pheasants, which are closely related to common farmed species. Mechanical or manual handling and the clean processing of the entire carcass into products are completed with proper packaging and adequate refrigeration or freezing—critical stages for preventing the growth of C. jejuni and essential for ensuring product safety for consumers. In the analysis of research across European countries, poultry meat is identified as the main cause of human Campylobacter spp. infections, with C. jejuni being the most frequent species found in poultry, carcasses, and products. In nearly all countries, a high prevalence of C. jejuni was observed in chicken products (raw chicken, turkey, duck, meat cuts, carcasses, wings, fillets, thighs, marinated products, all the above with skin, minced chicken and its products, chicken liver, preparations, products with or without packaging, farmed wild game products) throughout the meat's lifecycle (farm-processing units-retail market). In many countries, more research is needed due to the lack of data on the occurrence of the microorganism in poultry meat, as well as more sampling and microbial analysis at primary and secondary processing stages. In many countries, C. jejuni prevalence was higher in domestic poultry products compared to imported meat, with contaminated imported products being more common than domestic ones. Additional prevention strategies are required in these countries at the farm, slaughterhouse, and processing unit levels. Some European countries have action plans aimed at preventing the spread in farms before it begins to spread in slaughterhouses and throughout the food chain, showing lower prevalence rates. Despite significant efforts by regulatory authorities, national bodies, and the poultry production industry to control the spread, campylobacteriosis remains the zoonosis with the highest incidence in the EU. Poultry meat remains contaminated "from farm to fork." While it would be constructive for slaughterhouses and poultry meat processing units to implement HACCP to minimize contamination, it is challenging to control, particularly at the retail and household processing levels. A comprehensive effort is critical by all stakeholders across all European countries, including biosecurity at the farm level, effective HACCP in slaughterhouses and processing units, the safe rendering of meat into individual products, proper storage, safe packaging and distribution of the product, proper handling at the retail and food service levels, and ultimately a proper consumer education strategy on correct thermal processing and handling of poultry meat to eliminate the microorganism and avoid cross-contamination. Keywords: C. jejuni, Campylobacter spp., poultry, products
15/11/2024	SIOUMPOURA KONSTANTINA	<b>Evaluation of the effect of the parameters of modified atmosphere packaging on the shelf life of food: Meta-data analysis</b>	TSIRONI THEOFANIA	Food undergoes complex processes that lead to spoilage, negatively impacting consumer acceptance and significantly contributing to food waste. Today, consumers expect food products to have a long shelf life, as well as good nutritional value, visual quality, and safety. For this reason, the food industry has developed modern packaging technologies to meet consumer demands. One of these technologies is modified atmosphere packaging. Meat and meat products fall into the category of highly perishable foods because they have a high nutritional content that supports rapid microbial growth, high activity levels, a pH of 5.5 or higher, autolytic enzymes, and a significant amount of fats and lipids that promote oxidation and spoilage. In this thesis, the qualitative characteristics of meat are initially discussed, such as appearance, mainly color, flavor, texture, particularly tenderness, juiciness/water retention, and odor. Following this, the spoilage of meat is analyzed, specifically microbial spoilage with various types of microbial growth in meat and its characteristics, lipid oxidation, protein oxidation, and enzymatic spoilage. Subsequently, modified atmosphere packaging is discussed, a method that extends shelf life and maintains food quality by inhibiting microbial growth and metabolism. The advantages of this method are highlighted, along with the gases used, mainly oxygen, carbon dioxide, and nitrogen, and the gas-to-product ratio. The study also explores predictive microbiology, a scientific field that uses mathematical models and computational tools to predict the growth, survival, and behavior of microorganisms in food or other environments, with reference to specific primary and secondary models. In this research, data were collected on microbial growth (TVC) as a function of storage conditions over time for beef steak and chicken fillet. The software "GetData Graph Digitizer" was used to digitize the data, and the Baranyi growth model and DMFit3.5 program were employed to study microbial growth by fitting growth curves. These tools were used to calculate the kinetic parameter of microbial growth rate (k <sub>app</sub> in d <sup>-1</sup> ) under the given storage conditions. The dependency of microbial growth rate constants on temperature and CO <sub>2</sub> percentage was also determined, fitting the data to the modified Arrhenius equation, with the 'standard error' between the two calculated. Finally, based on microbiological data from the literature and microbial growth rates calculated using the Arrhenius equation, the shelf life of beef and chicken fillets was estimated under different storage conditions, demonstrating the impact of storage parameters, namely temperature and CO <sub>2</sub> percentage.
15/11/2024	TSOMPANI KONSTANTINIA	<b>Implementation of a program to control and monitor live bivalve mollusc zones in Thessalic Gulf: marine biotoxins, pathogenic microorganisms and potentially toxic phytoplankton. Taking and removing measures (2022-2023)</b>	PARLAPANI FOTEINI	This study focused on the implementation of a surveillance program for live bivalve mollusc production zones as provided by the Ministry of Rural Development and Food and implemented by the local veterinary departments of the Regional Units of the country, in accordance with the current Greek and EU Legislation. The study focused on the production zones of live bivalve molluscs of the Thessalika gulf, specifically the areas that belong to the Metropolitan Unit of Thessaloniki. The criteria for the categorization of the zones were analyzed and then an extensive report was made on the monitoring of the points and the control of toxin-producing phytoplankton in the water, the presence or absence of biotoxins in the flesh of live bivalve molluscs and their microbiological control. Finally, details of the implementation of the program in the Metropolitan Municipality of Thessaloniki for the years 2022 and 2023 were recorded. In 2023, the phenomenon of toxic phytoplankton (Dinophysis spp.) in seawater was more intense than in 2022, which was most often associated with the presence of biotoxins (Okadaic acid) in the flesh of shellfish. In 2022, health measures were taken due to exceeding the limits in Escherichia coli in two quince fishing zones, while in 2023 in none. In both years, the absence of Salmonella spp. was recorded. The correct implementation of the control and surveillance program for shellfish production and fishing zones both in the Municipality of Thessaloniki and throughout Greece, as has been done since 2013, is a public health protection shield for the consumers. Keywords: Live Bivalve Molluscs, production zones, zone monitoring and surveillance program, toxic phytoplankton, Dinophysis spp., marine biotoxins, Escherichia coli, Salmonella spp.

15/11/2024	CHATZIMPYROU NATALIA	<b>Development of new added value seafood products in edible packaging</b>	PARLAPANI FOTEINI	The aim of this Master's Thesis was to develop new fish products stored in edible packaging, aiming at preventing microbial growth and prolonging the commercial shelf life of Mugil cephalus fillets at 2°C and 8°C. To achieve the above objective, edible coating solutions containing 1.5% (w/v) sodium alginate, and 10% (v/v) glycerol were prepared, as well as two recipes containing the following: salt, pepper, oregano, garlic powder (Recipe A) and salt, cayenne pepper, chilli and lemon (Recipe B). According to the organoleptic examination, the fillets of the 4th and 6th treatments ("Recipe A" and "Recipe B" with edible film coating, respectively) were found to have a longer commercial shelf life (16 days) than those of the other treatments, when stored at 2°C. In addition, in the fillets stored at 20°C, compared to the control (Treatment 1), those of Treatment 2 (edible film coated fillets) had a shelf life extended by 4 days, while those of Treatments 3 and 5 (fillets with Recipe A and B respectively) had a shelf life extended by 8 days. In the case of fillets stored at 8°C, compared with the control (Treatment 1), the shelf life of fillets from Treatment 2 (edible film-coated fillets) was extended by 2 days, while that of those from Treatments 3 and 5 (fillets with Recipe A and B respectively) and Treatments 4 and 6 (Edible film-coated Recipe A and B) was extended by 4 days. Regarding microbial populations, Total Mesophilic Flora (TMF) was at the level of 4.07 log cfu/g while for the fillets of the 4th and 6th treatment, respectively, stored at a temperature equal to 2°C on day 16, it reached 8.33 and 8.96 log cfu/g. For fillets stored at 80°C, Total Mesophilic Flora (TMF) was at the levels of 7.90 and 8.59 log cfu/g for fillets of Treatment 4 and 6, respectively, on day 8. Pseudomonas spp. were found to be the dominant microorganisms at the end of the commercial shelf life in all cases, while Enterobacteriaceae family bacteria, Oxysgalactic, H2S bacteria, Yeasts and Fungi were found in much lower populations. Regarding the results of the master thesis, coatings containing 1.5% (w/v) sodium alginate, and 10% (v/v) glycerol further upgraded the quality of cephalopod fillets and extended the shelf life in the market by 10 days at 2°C. Keywords: Edible coatings, Alginates, Commercial shelf life, Specific Algal Microorganisms (SOM), Flathead grey mullet (Mugil cephalus)
27/3/2025	ZAVALI PARASKEVI	<b>Innovations in mild processing methods of products of food of animal origin</b>	GEORGOPOULOS THEOFANIS	This research focuses on the facilitating mild processing techniques of animal sourced foods to achieve enhanced food safety, improved food quality and sustainable food processing. Thermal processed foods using traditional practices are known to alter nutritional and sensory attributes while having an impact on the environment. As a result, non-thermal and mild thermal technologies have received increased interest as more effective technologies in the preservation and improvement of food quality. Covering a variety of topics of interest, the research is primarily concerned with High Hydrostatic Pressure (HHP), Pulsed Electric Fields (PEF), and ultrasound. These techniques show enhanced efficacy in microbial neutralization without compromising on the sensory and nutrient qualities of foods such as milk, meat, fish, and eggs. Further, the combined mode consisting of thermal and non-thermal process has the opportunity of process enhancement which is the key to both cost reduction and quality improvement. Perhaps, the strongest focus is made on the opportunities that these technologies provide in terms of environment. Most gentle processing techniques are also less energy intensive and might help in minimization of food wastage due to longer shelf life and product integrity. They accord with the international sustainable standard to meet the increasing need for products that are natural, organic, environmentally sustainable and of high quality. The results imply the necessity of using these progressive methods in the sphere of food production and service. Thus, High Hydrostatic Pressure efficiently destructs pathogens without affecting the sensory characteristics of foods, Pulsed Electric Fields and Ultrasound applications are targeted methods that improve food texture through particular procedures. In addition, the study suggests enhancing the combined methodologies to increase the efficiency of applying them to the particular food type. Areas for further research referred to studying the effects of mild processing technologies in the long term, from the point of view of food safety and quality, assessment of their adequacy from the point of view of environmental and economic characteristics, as well as further research on methods of their combination with traditional methods of food processing. The application of other high technologies, including artificial intelligence and data analysis, is planned to optimize the parameters of processing, while maintaining the scientific fundamentals of SDTS and ensuring highly efficient and reproducible use in the chemical industry.
27/3/2025	KAGKARA DOROTHEA	<b>Development of a quantitative deterministic dietary mycotoxin zearalenone (ZEA) exposure assessment in meat alternatives</b>	KAKAGIANNI MYRSINI	In recent years, the decline in consumption of meat and meat products for health and sustainability reasons has led to the development of alternative plant – based meat products. These products are made from ingredients such as legumes, wheat gluten and vegetables due to their high protein content. However, not much attention has been paid to the assessment of risks such as mycotoxins, which are associated with the extensive consumption of these products as well as their impact on human health. Zearalenone (ZEA) is one of the most worrying mycotoxins found in these foods. The aim of this study was to assess the exposure of the European population to ZEA through the consumption of legume – based meat alternatives (processed whole meat products and sausages). Exposure to ZEA through consumption of the two meat analogues was estimated for (4) population groups, including both (2) genders, in (28) European countries during the period 1997 – 2019. Consumption data were collected from the EFSA (European Food Safety Authority) food consumption database. The occurrence and consumption data were combined to calculate the ZEA exposure using the causal method in IMPRORISK software. Three scenarios were generated: the estimation of the Lower Bound (LB), the Middle Bound (MB) and the Upper Bound (UB) for the ZEA and the mean consumption and the 95th percentile (high consumption) were presented. The mean concentrations of ZEA in the studied food category in the (3) scenarios (LB, MB, UB) which used for the dietary exposure assessment were LB = 0,0053 mg / kg, MB = 0,0059 mg / kg and UB = 0,01056 mg / kg. The results showed that the mean and 95th percentile of the Estimated Daily Intake (EDI) of ZEA after consumption of legume – based analogue meat products was significantly below the Tolerable Daily Intake (TDI = 0,25 µg / kg bw/ day) and the Hazard Quotient was (HQ <1) for the (28) European populations. Therefore, based on these results, the risk appears to be low and the consumption of these foods appears to be quite safe, but in the absence of legal limits, particular attention should be paid to the inappropriate consumption of these products, especially for the age group of children (infants, adolescents) where no legal limits have been established. Keywords: Plant based meat alternatives, Mycotoxins, Zearalenone (ZEA), Exposure assessment, Quantitative Chemical Risk Assessment
27/3/2025	KOUSIS VASILEIOS	<b>Data meta-analysis of biological hazards occurrence of the edible insect Tenebrio molitor</b>	MALISSIOVA ELENI	The search for alternative sources of proteins has occupied the scientific community in recent years, mainly due to demographic, economic and environmental reasons. The most common alternative sources of protein are algae, fermentation products, laboratory meat, plant substitutes and edible insects. Edible insects, although traditionally consumed by many peoples around the world, are spreading worldwide as a thriving modern food trend for humans, but also as feed for farm animals and pets because they are rich in protein and other nutrients. Their production and consumption is governed by a series of legislative texts in the EU, while at the same time studies regarding their safety are constantly carried out. At an industrial level, they are offered to the consumer, either as whole, or as an individual ingredient in a variety of products, such as various types of snacks. The purpose of this thesis is the meta-analysis of data on the biological risks of T. molitor. For this purpose, a systematic review was carried out, by extracting data from scientific databases, using inclusion and exclusion criteria of the studies. Qualitative data meta-analysis was then performed to identify trends. In total, 32 studies were included in the meta-analysis, from an initial framework of 162 studies, from which it emerged that the biological risks of the T. molitor insect, concern hierarchical bacteria, yeasts and fungi, viruses and parasites, while mycotoxins are also mentioned, as a fungal metabolic product. Bacteria are listed as the most numerous category of biological hazards. The research showed mainly pathogenic bacteria, such as S. aureus, B. cereus, L. monocytogenes, E. coli, C. perfringens, B. thuringiensis, S. marcescens, Enterobacter spp, Clostridium spp and Bacillus spp, while some beneficial bacteria are also mentioned, such as LAB and bacteria of the insect's normal microflora, such as Enterococcus spp. Regarding fungi, the genus Fusarium spp was mentioned, as well as some Entomopathogenic fungi. At the level of mycotoxins, mainly Zearalenone, Deoxynivalenol and Fumonisin B1 were identified. Finally, parasites and viruses are observed with much less frequency. In post-analysis, the data were cross-referenced and compared with data from studies of other foods, such as meat. The conclusions drawn indicated limitations in the existing situation, leading to proposals for future further research. Keywords: Tenebrio molitor, edible insects, biological hazards, biological risks
27/3/2025	LEOUDI EIRINI	<b>Quantitative determination of microbiological hygiene indicators in Fish and seafoods</b>	KAKAGIANNI MYRSINI	This postgraduate thesis focuses on the quantitative determination of microbiological hygiene indicators in fish and fish products, with particular emphasis on sea bass (Dicentrarchus labrax), as an experimental analysis were performed on samples of this species. The work investigates the microbial contamination of these products, the methods of analysis and the safety management strategies for food of animal origin to ensure their quality and hygiene. In the first part of the study, a detailed presentation of fish and fish products, their ecological and nutritional importance, and the historical evolution of microbiological monitoring of these products is presented. Emphasis is placed on the importance of the safety of seafood for public health, as these products are particularly vulnerable to microbial contamination due to their high moisture and protein content, which is conducive to the growth of bacteria and fungi. The main microbiological hygiene indicators used to assess the quality of fish and fish products are analysed below. Among these, the pathogenic bacteria Listeria monocytogenes, Salmonella spp., Vibrio spp., Staphylococcus aureus, Escherichia coli, as well as bacteria of the Enterobacteriaceae family, which are important indicators of microbial contamination, are studied. In addition, reference is made to the fungi and yeasts associated with seafood spoilage that can affect the shelf life and quality of the products. These micro-organisms can cause food-borne infections and poisoning, making continuous monitoring and detection necessary. Another important factor under investigation is the means of contamination of fish and fish products. The hygiene conditions throughout the entire product handling chain, from catching and processing to transport and sale, are analysed. The possible sources of contamination, such as cross-contamination during transport, contact with contaminated surfaces and human resources, which may be a vector of bacterial contamination if personal hygiene rules are not observed, shall be examined. In addition, the importance of proper refrigeration and storage is stressed, as low temperatures can slow down, but not eliminate, the growth of bacteria. Particular emphasis is placed on the analytical methods applied for the quantitative detection of micro-organisms in fish and fish products. Classical culture methods are presented, which, although reliable, require a considerable amount of time to complete the analyses. In addition, rapid detection methods such as bacterial ATP-based microbiological assay, conductivity measurement and microscopy-based techniques such as fluorescent in situ hybridization (FISH) and flow cytometry are discussed. Particular attention is paid to molecular detection techniques, such as polymerase chain reaction (PCR), which offers high sensitivity and accuracy in the identification of microorganisms. The institutional framework governing the microbiological analysis of fish and fish products is then discussed. The international, European and national regulations defining the permissible limits of microbial contamination and safety standards for food of animal origin are presented. Particular emphasis is placed on European Regulation (EC) 2073/2005, which establishes microbiological criteria for foodstuffs, and on the requirements for the implementation of food safety management systems, such as HACCP (Hazard Analysis and Critical Control Points). The research part of the thesis involves the microbiological analysis of fresh sea bass samples in order to evaluate the presence and concentration of pathogenic bacteria, as well as the physico-chemical parameters of the product, such as pH measurement. The results highlight the need for strict compliance with hygiene rules at all stages of the supply chain in order to ensure the quality and safety of the fish. In the discussion, the findings of the present study are compared with data from previous studies and measures to improve the microbiological safety of seafood products are proposed. In particular, the need for systematic monitoring of microbial loads through rapid detection and enhanced surveillance in fish processing and distribution facilities is highlighted. Finally, the main conclusions are summarised and recommendations for further research are made, focusing on the development of new molecular analytical techniques, the improvement of product storage and preservation methods and the implementation of stricter regulations to ensure the quality of fish and fish products. Keywords: Microbiological markers, sea bass (Dicentrarchus labrax), fish, Listeria monocytogenes, Salmonella spp., Vibrio spp., Staphylococcus aureus, Escherichia coli, Enterobacteriaceae, yeasts, fungi, PCR, analytical methods, food safety, food quality.

27/3/2025	MAKROGIANNIS ANTONIS	<b>Recording of cold chain in retailers and study of impact on quality and spoilage of fresh meat</b>	GIAVASIS IOANNIS	The maintenance of the cold chain is a key prerequisite for the safety, quality, and shelf life of fresh animal-derived products. However, temperature deviations recorded during the transportation, storage, and distribution of food may accelerate the growth of spoilage and pathogenic microorganisms, leading to quality degradation, food losses, and potential public health risks. This study focuses on recording the cold chain conditions in the retail sector and investigating the impact of temperature fluctuations—as defined by the detection levels of the Time-Temperature Indicators (TTIs) used—on the quality and spoilage of fresh pork meat. The research was based on the use of Time-Temperature Indicators (TTIs) and wireless temperature data loggers to continuously monitor the cold chain from the distribution stage to storage at retail points. In parallel, microbiological and physicochemical analyses were conducted on pork meat samples, aiming to assess changes in key parameters such as microbial growth ( <i>Pseudomonas</i> spp., <i>Enterobacteriaceae</i> , lactic acid bacteria), pH, weight loss, and changes in color, odor, and texture. Furthermore, the correlation between temperature deviations and the acceleration of product spoilage was examined, along with the effectiveness of TTIs as tools for dynamic freshness traceability compared to static expiration dates. The results showed that changes in TTI color and temperature fluctuations, in relation to the duration of product exposure, were directly associated with increased microbial load and sample spoilage. The growth of spoilage bacteria led to noticeable quality deterioration, reducing product shelf life and increasing the likelihood of rejection prior to consumption. The use of TTIs enabled more accurate real-time assessment of food condition, offering a more reliable monitoring method compared to traditional systems based solely on expiration dates. Moreover, the need for integrating advanced cold chain management technologies—such as TTIs, the Internet of Things (IoT), and blockchain—was highlighted, with the aim of improving traceability, enabling early detection of temperature deviations, and reducing the economic and environmental impacts associated with food losses. Food losses due to temperature deviations affect not only producers and retailers but also have significant environmental consequences. Food waste entails the loss of valuable natural resources such as water and energy used during production, processing, and transportation. At the same time, discarded quantities contribute to increased organic waste and greenhouse gas emissions, further burdening the environment. Therefore, improving cold chain management is not only a commercial necessity but also a critical factor for the sustainability of the global food supply chain. Overall, this study highlights the importance of maintaining optimal refrigeration conditions at every stage of the supply chain for fresh animal-derived products. The integration of intelligent monitoring systems and dynamic freshness assessment tools such as TTIs, IoT, and blockchain can significantly contribute to reducing food losses, enhancing food safety, and promoting more sustainable practices in the food supply chain. Keywords: Cold chain, Time-Temperature Indicators (TTI), meat spoilage, food microbiology, meat quality, food waste, food safety.
27/3/2025	MAKROGIANNIS EFTHYMIOS	<b>Study of the presence of aflatoxin M1 in milk and dairy products</b>	GIAVASIS IOANNIS	This master's thesis examines the levels of aflatoxin M1 (AFM1) in raw milk and dairy products, with an emphasis on comparing its concentrations in different types of milk, its seasonal variation, and the differences between conventional and organic milk. Aflatoxins, particularly AFM1, pose a serious risk to public health due to their carcinogenic and hepatotoxic effects. Their presence in milk is associated with the metabolic conversion of aflatoxin B1 (AFB1) into AFM1 in dairy animals, making it necessary to monitor and control their levels to ensure food safety. The thesis provides a detailed analysis of AFM1 detection methods, including enzyme-linked immunosorbent assays (ELISA) and advanced chromatographic techniques (HPLC-FLD, LC-MS/MS), as well as innovative techniques such as biosensors. Furthermore, it examines AFM1 levels in various dairy products, with cheese showing the highest concentrations due to its production process. The research also indicates that AFM1 exhibits seasonal variation, with higher levels detected during winter due to contaminated animal feed, while organic milk contains lower AFM1 concentrations compared to conventional milk. Finally, strategies for reducing AFM1 are proposed, such as proper feed storage, the use of adsorbent substances, and the strengthening of monitoring systems, aiming to improve milk quality and protect public health. "Keywords": Aflatoxin M1, Milk and dairy products, Aflatoxin detection, Food safety
27/3/2025	MAVRIDOU PARTHENA	<b>Case study of recorded incidence of biogenic amines in fisheries in the European Union</b>	GIAVASIS IOANNIS	Histamine accumulation in fish is a critical food safety concern, as excessive levels can lead to histamine poisoning, causing symptoms ranging from mild discomfort to severe allergic reactions. This study investigates the presence of histamine in different fish species, analyzing factors affecting its formation and evaluating food safety risks associated with histamine contamination. A combination of data analysis from the Rapid Alert System for Food and Feed (RASFF) and laboratory testing of fish samples was used to assess histamine concentrations. The results indicate that species of the Scombridae family (e.g., mackerel, anchovy, tuna) are particularly susceptible, with 60% of tested samples exceeding 200 ppm, the regulatory threshold established by the European Union. Extreme cases reported levels as high as 2,500 ppm, presenting a significant public health hazard. Histamine levels varied by product type: 73% of non-compliant cases were found in fresh fish, while 27% involved frozen products and 5% were detected in canned fish. The geographical analysis revealed that 42% of contaminated samples originated from Sri Lanka and Indonesia, with the highest number of official notifications recorded in the Netherlands and Belgium, likely due to stricter import inspections. The findings underscore the need for enhanced cold chain management, stricter regulatory alignment across countries, and more advanced histamine detection techniques. Strengthening food safety policies and implementing targeted monitoring programs can mitigate the risks associated with histamine contamination, ultimately improving consumer protection and public health outcomes.
18/7/2025	AGGOU ANTONIA	<b>Effect of Freeze-drying on the Nutritional, Biochemical, and Sensory Characteristics of Crab Eggs, Sea Urchin, and Caviar for the Development of New Products</b>	BOZIARIS IOANNIS	Freeze drying is an innovative dehydration method widely used in the food industry, as it preserves the nutritional and sensory characteristics of products while extending their shelf life. Particularly in the seafood sector, this technique offers significant advantages, such as the stabilization of sensitive bioactive compounds, enhancement of antioxidant activity, and preservation of quality, making it a valuable tool for developing new, high-value products. In the present study, the effect of freeze drying on the nutritional, biochemical, and sensory characteristics of crab roe, sea urchin, and Beluga caviar was investigated. Product stability was analyzed through water activity, polyphenol concentration, and antioxidant activity, as well as their carotenoid and fatty acid content. The results showed that freeze drying significantly reduced water activity, enhancing product stability and shelf life. Additionally, an increase in antioxidant capacity was observed, with sea urchin and crab roe exhibiting the highest values, while Beluga caviar showed a smaller but notable improvement. Freeze drying also contributed to the preservation and stabilization of carotenoids, while fatty acid analysis indicated that sea urchin was particularly rich in omega-3 and DHA, crab roe displayed a balance between PUFA and MUFA, and Beluga caviar was dominated by MUFA, offering a high DFA index. Sensory evaluation revealed that freeze drying maintained and enhanced the sensory properties of the products, with sea urchin standing out for its intense marine flavor and aroma, crab roe for its granular texture and balanced taste, while caviar exhibited mild, refined sensory attributes, emphasizing crispness, sticky texture, and an earthy aroma. Testers ranked lyophilized sea urchin as the most preferred product, followed by caviar and crab roe. Overall, the study highlighted sensory as a high-value-added technology that not only improves the stability and bioactive characteristics of seafood products but also affects their sensory properties, providing valuable insights for developing innovative, nutritionally rich marine-based products.
18/7/2025	VASILOPOULOU ANASTASIA	<b>Investigating the determinant factors of food waste according to the dietary and consumption habits of Greek consumers</b>	POLYMEROS KONSTANTINOS	Food waste is one of the most significant environmental, social, and economic issues worldwide, as according to international organizations, approximately one-third of all food produced for human consumption ends up as waste. This phenomenon results in severe economic losses, environmental degradation through greenhouse gas emissions and resource depletion, and exacerbates food security challenges and social inequalities. This study focuses on Greece and aims to analyze the determining factors of food waste, considering the dietary and consumption habits of Greek consumers. Specifically, it investigates social, economic, psychological, and cultural factors that influence purchasing and dietary behaviors, such as excessive food purchases, improper storage, dietary habits leading to large portions and unnecessary food disposal, and the lack of awareness regarding proper food management and expiration dates. To achieve the research objectives, a primary study was conducted using questionnaires distributed to a random sample of Greek consumers. The data were analyzed using statistical methods to identify the key factors contributing to food waste. The findings indicate that the culture of abundance and lack of awareness play a crucial role in food waste, while economic conditions, social perceptions, and the tendency to purchase large quantities due to discounts or promotional activities further increase waste. Based on the results, the study proposes measures that could help reduce food waste, including awareness campaigns on proper food storage and consumption, the integration of educational programs to raise consumer awareness, and the implementation of policies promoting the circular economy and sustainable food management. This research provides scientifically grounded insights into the phenomenon of food waste in Greece and contributes to the development of strategies aimed at mitigating the problem, fostering sustainable development, and ensuring more efficient food resource management.
18/7/2025	EIRINAKI MARIA	<b>Genomic data analysis to identify potential spoilage and pathogenic microorganisms in meat products</b>	PARLAPANI FOTEINI	The present master's thesis aimed to analyze genomic data to identify the main spoilage and pathogenic microorganisms in meat products. The study showed that spoilage microorganisms, such as <i>Pseudomonas</i> spp. (up to 60–70% under MAP packaging), <i>Shewanella</i> spp., <i>Brochothrix thermosphacta</i> (66.7% on poultry meat), <i>Lactobacillus</i> and <i>Leuconostoc</i> (totally reaching 40–50% under anaerobic storage conditions), are responsible for noticeable changes in the smell, taste and texture of meat. At the same time, pathogenic microorganisms such as <i>Salmonella</i> spp. (45% on poultry meat), <i>Escherichia coli</i> O157:H7, <i>Yersinia enterocolitica</i> and <i>Campylobacter jejuni</i> constitute a significant threat to public health, as they can survive and multiply even under refrigeration conditions. The results showed that the type of meat and the storage conditions significantly affect the microbial profile and the extent of spoilage. In conclusion, genomic techniques emerge as a valuable tool for the rapid and reliable identification of both spoilage and pathogenic microorganisms, thus contributing to the improvement of the quality and safety of meat products. It is worth noting that the findings of the present study are largely in agreement with the literature discussed, confirming the importance of <i>Pseudomonas</i> , LAB and Br. thermosphacta as the main spoilage organisms, as well as the presence of important pathogens such as <i>Listeria</i> and <i>Salmonella</i> .
18/7/2025	KOMMATA PARASKEVI	<b>Microbial communities and predominant microorganisms during cheese ripening</b>	PARLAPANI FOTEINI	Cheese production is a complex process that relies heavily on the activity of microorganisms, including lactic acid bacteria, molds, and yeasts. These microorganisms are responsible for the fermentation of milk, the breakdown of proteins and fats, and the development of the cheese's flavor, texture, and aroma. The microbiota of cheese is influenced by various factors, including the type of milk used, the production environment, and the technological processes employed. This thesis explores the role of microorganisms in cheese production, the dynamics of microbial interactions, and the factors that affect the cheese microbiota. Understanding these processes is crucial for optimizing cheese production, improving product quality, and ensuring consistency in large-scale manufacturing. Through a better understanding of microbial communities and their interactions, the future of cheese production holds the potential for greater innovation and quality enhancement in cheese products. Keywords: Microbial communities, cheese microorganisms, cheese ripening