Video Presentation

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Food safety in metals contaminated areas, Haut Katanga, D R Congo

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Objective: The aim of this study was to assess trace metals level in daily food and his relationship with faeces, urine and soil metals concentrations in the population of Haut Katanga Province (DRC).

Methodology: Participants (70 children and 50 adults) in different locations supplied duplicate meals of 96 consecutive hours, 96 hours total faeces samples, 24 hours total urines and an indoor and outdoor dust samples in the dry season. Concentrations of trace elements were measured in all samples by ICP-MS.

Results and Discussion: Significant different was found between the contaminated (C) and reference (R) areas, high concentrations of trace metals were found in food and soil of the contaminated areas at different level of significant ((C) versus (R) mean [minimum - maximum] in (µg.kg-1)); Al: 266685528 [19823100 - 1259732200] vs 53244155 [8983400 - 164797400], Co: 267,513 [82,745 - 1435,186] vs 114,088 [36,142 - 790,335], Cu: 2775,760 [1233,627 - 5125,207] vs 1849,187 [1051,237 - 3018,073], As: 150,013 [0,018 - 506,513] vs 54,361 [0,018 - 302,538], Se: 165,378 [18,755 - 481,320] vs 98,448 [0,008 - 246,311], Mo: 419,599 [74,131 - 1564,076] vs 243,333 [89,336 - 669,653], Sb: 7,125 [0,012 - 55,606] vs 17,041 [0,012 - 75,456], U: 7,236 [1,223 - 27,952] vs 3,284 [0,000 - 34,155]. And a linear relationship of metals concentration in Food-Soil, Food-Faeces and Food-Urine of contaminated areas was observed and in reference areas only As (Food-Soil) and Co (Food-Faeces) was in relationship. Concentration of Mn, Fe, Cu, Zn, Mo and U were also significant different in food cooked outside in contaminated areas and we observed a relationship between food cooked outside and concentration mean of several trace metals in contaminated areas. The daily intake of trace metals through food between children (Ch) and adults (Ad) in contaminated areas was significant different only for Cu and Zn. But these result hide the real exposure situation especially in children, that's why we estimated the daily intake of metals by kilogram of body weight (kg-1bw) and the result in food showed that, in contaminated areas, children were twice or more exposed ((Ch) versus (Ad) mean [minimum-maximum] in (µg.kg-1bw)); Al: 2899,345 [98,000-15724,000] vs 1248,844 [68,000- 4889,000], V: 1,410[0,000-5,678] vs 0,665[0,119-2,673], Mn: 120,308[0,000-377,627] vs 55,739[10,665-141,219], Fe: 621,261[0,000-3122,027] vs 237,727[35,363-1106,725], Co: 2,876[0,000-15,976] vs 1,104[0,177-3,967], Cu: 27,626[0,000-91,246] vs 14,932[3,050-37,971], Zn: 214,800[0,000- 581,285] vs 102,505[29,131-222,011], As: 1,483[0,000-4,321] vs 0,498[0,000-1,343], Se: 1,637[0,000-4,514] vs 0,647[0,039-1,365], Mo: 4,098[0,000-15,445] vs 2,377[0,458-14,378], Cd: 0,310[0,000-0,873] vs 0,134[0,019-0,402], Sb: 0,064[0,000-0,338] vs 0,032[0,000-0,142] and U: 0,075[0,000-0,423] vs 0,033[0,006-0,093], through daily food than adults and in reference areas Al:798,077 [39,000-2653,000] vs 283,833 [36,000-1051,000], Fe: 1464,397[1,757-24,630] vs 158,702[34,180-461,106], Cu: 22,738[4,937-40,404] vs 10,059[34,180-461,106], Mo: 2,635[0,291-6,281] vs 1,352[0,253-5,003], Cd: 0,412[0,055-0,991] vs 0,127[0,016-0,336] and Pb: 2,475[7,376-0,991] vs 0,803[0,116-2,729].

Conclusion: Children are the most exposed and the exposition is higher in the contaminated areas. The most important issue is to use research outcome to plead for sustainable development for without safety environment it's difficult to provide safety food.

Speaker Biography

Trésor Carsi Kuhangana was born in Democratic Republic of Congo in 1984. He is graduate (BAC+6) in human nutrition (2014) and is currently member and researcher at the Toxicology and Environment Unit of the University of Lubumbashi in Democratic Republic of Congo since 2015. During 2016 - 2017 he worked as main investigator in the VLIR project (ZRDC2015PRO90) *Pollution par les métaux et effets sur la santé publique au Katanga, R.D.Congo* coordinated by the same research unit. He has a strong interest in Food Toxicology, especially in chemical contamination of Food. As researcher, a third cycle to increase research skills remain his priority.

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Curbing against dietary diseases through healthy eating: Enlightening the future advances in Food Safety and Hygiene practices

Muhammad Abdullah Bin Masood
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Prevalent eating habits are the biggest contributer affecting human health so immensely that we are left with half of people suffering from over nutrition while the other half from under nutrition. Uncontrolled intake of refined grains, added sugars, fats, meats and their related products are increasing rapidly. Most of the people particularly from developing and under developed countries are not properly concerned about the recommended dietary intake of food components and the consequences of their abuse. As a result, the index of CVDs, diabetes type II, obesity, stunted growth, vitamins and mineral deficiencies are getting speedup. My research findings indicated that increasing awareness among all age groups particularly children through introduction of "my plate concept" which is based on intake of good carbohydrate sources such as fruits, vegetables and whole grains, protein sources such as lean meat, low-fat dairy products, pulses, nuts and soy and fats sources such as vegetable oil has promising outcomes. Further research indicated that intake of salt, saturated fats and added sugars should be limited as their abusive are the marked indicators for dietary diseases such as Obesity, CVDs, Hypertension and Diabetes type II. Finally, the adoption of healthy eating practices although require time but if implemented would not only keep us healthy but also make us live more.

Speaker Biography

Muhammad Abdullah Bin Masood is a final year student of BSc.(Hons) Food Technology from Pir Mehr Ali Shah Arid Agriculture University, Pakistan. He has completed short course" New Nordic diet" from University of Copenhagen, Denmark.

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Functional food made from bullfrog meat for children in vulnerability

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Bullfrog meat has high biological value protein in which all amino acids essential to human metabolism are present, high content of polyunsaturated fatty acids, despite having extremely low fat content, and is an important source of absorbable calcium, promoting improvements in metabolism, especially the immune system. These attributes were observed when choosing raw material for the elaboration and production of food supplements for children in early childhood, not only to ensure adequate nutrition, creation of healthy eating habits, and good physical and mental development, but also to counteract chronic malnutrition, muscular atrophy, fatigue, weakness, and obesity, problems which have been growing worse in developing countries. This functional food reduces the costs of treatments for these pathologies, which is especially important in cases of inborn errors of metabolism, such as food allergies. The five formulas developed as food supplements presented macro nutrient values within parameters recommended for infants and children in early childhood by the World Health Organization (WHO) and was prepared with usually neglected parts of the bullfrog carcass, increasing profitability to the producer. The developed technological process is a simple procedure, which does not require expensive equipment or extensive training, promoting social insertion, while producing food within ideal standards of nutrition and hygienic conditions.

Speaker Biography

Eliane Rodrigues graduated in Pharmacy and has a PhD in Technological Processing and Hygiene of Products of Animal Origin from Fluminense Federal University, Brazil. She is the lead researcher at the State Center for Research in Food Quality of the Agricultural Research Company of the State of Rio de Janeiro, Brazil. She has over 100 publications, patent filings, Ad hoc consultancies in several leading journals, in addition to being author to chapters in technical books and Good Manufacturing Practices manuals.

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Anti-listerial activity of fresh or lyophilized LAB bacteriocinogenic and microbiological characteristics of a Portuguese traditional meat sausage (Alheira) during storage at 4°C and 20°C

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Alheira is a highly appreciated traditional Portuguese fermented sausage. Modern consumers require products that not only have high appealing sensory attributes but are also safe. There is increasing interest in the use of natural preservatives, and metabolites produced by lactic acid bacteria (LAB) are good candidates. This work aimed to investigate the effect of using a fresh and dried starter culture of an autochthonous bacteriocinogenic LAB strain (Lactobacillus sakei ST153Ch), on the microbiological characteristics of Alheira when stored at 4°C and 20°C. The anti-listerial activity of this culture in this food matrix was also investigated. Alheira with the addition of fresh (ca. 108 cfu/g) and dried (ca. 108 cfu/g) culture and Alheira control (no starter culture added) were produced by an industrial meat company. On the day of production, these products were transferred to the laboratory and samples were inoculated with Listeria monocytogenes (ca. 107 cfu/g). All the samples were stored at 4°C and 20°C for 60 days and the following analysis, in triplicate, were performed at defined time periods: -Detection of Listeria monocytogenes, Salmonella spp., sulphite reducing clostridia, Yersinia enterocolitica and enumeration of L. monocytogenes, Staphylococcus aureus, Bacillus cereus, Escherichia coli, Enterobacteriaceae, lactic acid bacteria (LAB), yeasts and moulds. The analyses were performed according to ISO methodologies. Pathogenic and indicator organisms were not detected or were below acceptable levels for all the samples. Immediately after production LAB counts were higher in Alheiras produced with the addition of the starter cultures than in control samples. For all the samples, counts increased during storage and reached similar values after 60 days (ca. 1011 cfu/g). Higher inhibition of L. monocytogenes was observed during storage at 20°C than at 4°C in Alheira inoculated with fresh or dried LAB.

Speaker Biography

Ariana Macieira is a researcher working in Paula Teixeira's group in Universidade Católica Portuguesa, in Porto, Portugal. She has been doing some work in the field of bacteriocins production by trying to find some techniques that will improve LAB bacteriocins with application in the food industry.

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Costs estimation of human salmonellosis outbreaks associated to animal products consumption in Brazil, 2008/2016

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Human salmonellosis is one of the most frequent foodborne diseases worldwide, causing damage to population health and a major financial impact, even in developed countries. In Brazil, due to communication system failures, it is estimated that only 10% of total foodborne outbreaks are reported. A partial budget model with stochastic modelling was used to estimate the costs of human salmonellosis outbreaks carried by animal products, notified to Health Ministry from January 2008 to December 2016. The costs were estimated on absence days of work and on hospital treatment expenses. Infected people were categorized according to illness severity: people who felt ill and stayed at home; people who got sick and received ambulatory care; people who got sick and needed hospitalization and people who got severely sick needing intensive care treatment. Probabilistic models were created to estimate costs for each category using @ Risk® (version 5.7, Palisade Corporation©, 2015). The total average cost was estimated at US$ 1.132.368,05. The variable of greatest impact was the average hospitalization (R^2 = 0.90), followed by average of absence days of work due hospitalization (R^2 = 0.38) and average of absence days of work per outpatient case (R^2 = 0.22). The model definition to estimate salmonellosis outbreaks costs, associated with animal origin products consumption, helps to show not only the financial impact of the disease in Brazil, but also allows a better visualization of the problem magnitude, improving the assertiveness of health surveillance programs.

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Effects of vacuum packaging on nutrient contents of fillet fish *Lethrinus Nebulosus*

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Aim of this was to study the effect of vacuum packaging on proximate composition and mineral content in fish fillet stored at -18 ° C for 0, 20 and 40 days. To determine the proximate composition and elements, standard and AOAC (2005), were used. Results showed the lowest zinc content in vacuum condition was found after 20 days (1.95 ppm+ 0.27), but the highest value was found after 40 days (2.69ppm+ 0.12) of frozen storage. The amount of sodium also increased during this period where the amount reached to (1318ppm+6.00) at end of the storage period. Potassium was found to be the most abundant mineral among the macro elements in fish tissue. Its amount in both packaging conditions did not show any significant difference, but after 20 days of experiment, amount of potassium in vacuum stored sample was higher than control (3477ppm+49.50). Amount of calcium in fish tissue was also higher than other samples at the end of the frozen storage period (398ppm+1.52). The protein percentage of fish fillets increased during the experiment period, except for day 0 (%19.31+0.04), but frozen samples under vacuum at 20 day (%19.52+0.05) and 40 day (%19.73+0.08), found more than control sample, however, there was no significant difference between them ($p > 0.05$). It can be concluded that vacuum packaging can significantly influence mineral content of fish fillets, and their shelf life can be enhanced through frozen storage.

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Novel food borne diseases and their prevention

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The chemicals present in food include a wide spectrum of substances that may exists as naturally occurring components as contaminants; or as adulterants added for the purpose of undue profits. Among the various contaminants and adulterants of concern are: (1) Oxytocin, a nonapeptide hormone, has been detected in several milk samples that is responsible for affecting the physiology and function of the ovaries which has been related to early puberty in girls; (2) Our studies showed that a disease, hepatomyoencephalopathy (HME) in several adjoining areas of western UP and Uttaranchal (India) leading to child mortality, is related to the consumption of the seeds of a wild plant Cassia occidentalis (CO). The toxic moieties were identified as anthraquinone derivatives; and Cyclosporine A plus N-Acetyl cysteine treatment reduces the mortality; (3) Investigations from our laboratory suggest that the deaths in children especially in Muzaffarpur are occurring in the litchi cultivating areas. These deaths are related to undernourished children wherein hypoglycemic encephalopathy is caused due to the presence of a compound, methylenecyclopropyl glycine (MCPG) in litchi fruits that causes derangement of fatty acid β-oxidation which in turn inhibits gluconeogenesis in liver. The patients with unconsciousness should be given infusion of 10% dextrose for recovery; (4) Mustard oil adulterated with Argemone oil (AO) causes a disease called 'Epidemic Dropsy'. Studies have shown that the toxic ingredient of AO, sanguinarine, causes gall bladder cancer that has been linked to the population of Indo-Gangetic basin, where mustard oil is predominantly consumed. Systematic bio-antioxidant therapy has been found to be effective in treating the patients. Thus, there is a need to restrict the presence of various contaminants & adulterants and strategies should be made for remedial actions to benefit the society.

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Risk assessment of aflatoxin in weanimix (cereal-legume complementary food)

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Weanimix (a cereal-legume complementary food) has shown promising results in improving health and growth rate of children. However, this could be compromised due to the susceptibility of the product to aflatoxin contamination. The objective was to assess the risk of liver cancer development from aflatoxin if infants (6-12months) in Ghana consume commercially prepared and homemade weanimix. Samples of weanimix were purchased from shops and the level of aflatoxins was tested. Previously published data on aflatoxin levels in homemade weanimix was also collected. These data were analysed to assess the level of risks of cancer development. Findings showed the minimum and maximum levels of aflatoxin in weanimix purchased from shops as 2.51ppb and 98.87ppb respectively while the same values for homemade weanimix were 7.90ppb and 500.00ppb respectively. Daily exposure estimate was higher in homemade weanimix compared to commercial weanimix. The margin of exposure from commercial weanimix with minimum and maximum levels of aflatoxin were 13.08 and 0.33 respectively while that for homemade weanimix were 4.146 and 0.065 respectively. The maximum risk of developing primary liver cancer was estimated at 23.74 and 119.34 cancers/year/100,000 population of infants fed on commercial and homemade weanimix respectively. Weanimix from both homes and shops pose high public health risk however findings showed weanimix with non-detectable levels of aflatoxin as well as levels below regulatory limits. Therefore, there is the need to educate commercial producers and women at household levels on the various mitigation measures for aflatoxin control and to enforce regulation of aflatoxin standards.

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Explore the deactivation effects of slightly acidic and basic electrolyzed water on food pathogen-*E. coli* by proteomic approach

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Neutral electrolyzed water including slightly acidic electrolyzed water (SAEW) and slightly basic electrolyzed water (SBEW), considered as high-performance bactericide are increasingly applied in the food industry recently. The SAEW, SBEW and NaOCl solution were treated with *E. coli*. The bacterial protein was extracted and applied in the SDS-PAGE analysis, then differential protein was identified by tandem mass spectrometry coupled with bioinformatics. Meanwhile, dehydrogenase activity, and protein, intracellular potassium and DNA leakages were analysed to evaluate bacterial damage status. The minimum inhibitory concentration was 30 ppm ACC for both SAEW and SBEW. The predominate chlorine species were hypochlorous acid and hypochlorite ion for SAEW and SBEW, respectively. The most severe leakages of DNA, protein and potassium as well as the lowest dehydrogenase activity for *E. coli* was found by 60 ppm SAEW treatment. The numbers of protein identification by tandem mass spectrometry were more than 80. They were responsible for energy metabolism, protein synthesis related enzymes, outer membrane proteins, chaperone proteins and protein for amino acid synthesis. This study demonstrated that SAEW and SBEW could destroy the outer membrane of *E. coli*. SAEW may also disturb the energy metabolism and protein synthesis system. The chaperone protein, glutathione and some amino acids were up-regulated to protect themselves against SAEW. This study demonstrates the exact deactivation mechanism of SAEW and SBEW on *E. coli.*

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Application of the HRMA technique for detecting 9 forbidden animals in halal food products for halal food safety in Thailand

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In general, food safety is a scientific discipline that aims to detect and prevent the contamination of food with hazards such as physical, chemical and biological substances but for Muslim consumers, surveillance of contamination of prohibited substances under Islamic law, especially forbidden animals is a must as one of the other hazards which directly affect not only to the physical health but also to the spiritual health of the consumers. Importantly, high resolution melting analysis (HRMA) is a highly molecular technique for the detection of specific types of organisms and quickly, based on the melting temperature (Tm) of the DNA that is specific to the organisms. Hence, this research aims to use a HRMA technique as a tool for halal food safety to detection of contamination of nine forbidden animals in halal foods, namely, pigs, dogs, rats, cats, monkeys, frogs, snakes, crocodiles and donkeys from food samples. The results showed that the HRMA technique was applied to detect the contamination of 300 commercial products of Thailand. It was found that two samples were contaminated with pigs' DNA in the examined products and no DNA of other forbidden animals was detected in any commercial products. Therefore, the HRMA could be used as a high-potential technique for detecting the forbidden animals contaminated in foods and representing the halal food safety for Muslim consumers.

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Staphylococcus aureus in traditionally processed sour milk sold in open traditional markets in Zambia

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Food safety in Africa remains a serious challenge and Zambia is not spared, especially not in traditional processing sectors. Milk as a food has been considered to be an ideal food for humans, particularly for children. However, (raw) milk can be a source of many pathogens including *Staphylococcus aureus* (*S.aureus*) and multidrug resistant bacteria like methicillin resistant *S.aureus* (MRSA). The SAD-Zambia project aims to characterize *S.aureus* / MRSA in the Zambian milk value chain and to reduce the risks to consumers and producers in Zambia. One important milk product is mabisi (sour milk), which is often processed by traditional dairy farmers (by spontaneous acidification of raw milk) and sold in open traditional markets. In our project, such markets were visited in three regions of Zambia (Western Province, Southern Province, and Lusaka Province) to collect sour milk from different sellers. *S.aureus* was detected in 7 out of 40 analysed sour milk samples and confirmed by MALDI-TOF. The further characterization of the isolates by molecular biological methods, including identification of MRSA, will be presented. Preliminary results indicate contamination of sour milk in Western and Lusaka Provinces with *S.aureus*. In contrast, no *S.aureus* could be isolated from sour milk samples obtained in the Southern Province. Therefore, the hygiene practices in mabisi preparation applied in different regions of Zambia will be presented.

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Food on the street and its safety concerns

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As a typical Nigerians from the South western region, and a promoter of hygienic 'Street vended food', I cannot imagine a day in my life without the popular on-the- go street meal, bean cake (akara), roasted plantain (boli) and 'suya' that I ate with passion. Street vended foods are easily accessible and solves major socio-economic problems confronted by both the poor and middles working class because of high paced city life. Most affected are the poor who doesn't have enough funds to patronize the structured food centers, whose activities are regularly regulated by the appropriate governmental bodies. This invariably exposed the larger population of the unsuspecting consumers to a lot of health hazards. And because of the various unhygienic ways and manners noticed in my day-to-day interaction with these operators of these street vended food operators, owners and managers in the food value chains (processing, production, preservation, packaging and marketing), which gives ample room for unwholesome practices and the risks it poses to the health and safety of consumers and practitioners along the chain. This presentation is out to address a lot of these identified challenges and recommend safety measures. The mission is 'Ensuring safe feed to achieve safe food practices' since the food value chain starts from the farm which is completely ignored as a critical control points to the table. The presentation will also highlights the basic safety and hygiene guidelines recommended for the Street foods for operators and consumers in our collaborative efforts adopted with the Lagos State Safety Commission, a newly established agency of government in Nigeria saddled with formulating, regulating and advocating measures relating to safety of lives in the community across socio- economic activities which includes setting of standards, measuring compliance, monitoring and institutional enlightenment. At FoodpreneurNews, food safety is a major concern and it is a collective responsibility of every citizen in order to build a safe society and improve safety culture and compliance among the street foods operators, owners and hawkers. We want to recommend this best practice across the globe.

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Process optimization with a single screw extrusion of low moisture food

Andy Moreno
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Since extrusion is the major thermal process used in 95 percent of all pet food production, the primary issues are the retention time in extrusion thermal processing and the monitoring of the temperature along the extruder barrel as measured at the highest level in the extrusion process (Rokey, & Baldwin (2013); Pet food Industry, 2013). Salmonella is known to be extremely resistant to lethal treatments in low-moisture foods (Carrasco, et al., 2012).

The heat resistance of Salmonella is affected by many factors, mostly by strain and serotypes tested, previous growth and storage conditions, the physical and chemical food composition, test media, and the media used to recover heat-damaged cells. Salmonella heat resistance generally increases with reducing moisture (Podolak, et al., 2010). Salmonella survivor cells can enter a viable but nonculturable (VBNC) state, which is a dormant state of the vegetative cells and a survival strategy for many nonsporulating bacterial species (Podolak, p. 1927)

- Issues to consider in optimizing the lethality step against these "survivor" Salmonella cells:
- Is any unprocessed material bypassing the lethality (cooking) step (Podolak, p. 1921)?
- Since the lethal damage occurs during the dehydration process, more rapid cell destruction may occur at temperatures lower than 700C (Podolak, p. 1924).
- Are sublethally injured cells revived post-processing treatment because of moisture (Podolak, p. 1927)?
- Could agitation of the suspension before heat treatment enhance the lethal effect of the heat process, kill step (Podolak, p. 1928)?
- Could the thermal death time be experimented with to determine optimal kill effects (Podolak, p. 1928)?
- Has the heat resistance of the Salmonella pathogen in the specific low-moisture product(s) been studied specifically, rather than applying published D- and z values from the literature (Podolak, p. 1932)?
- Was the oxygen and moisture content examined as elements of Salmonella survival of sub lethally heat-damaged cells (Podolak, p. 1927)?
- Are any aerosols created which could cross-contaminate the produce post-lethality step(s) (Carrasco, et al., 2012, p. 547)?
- Has the water and soil involved the lethality step(s) been tested for the presence of Salmonella (Carrasco, et al., p. 549)?
- Has the particle density and fat content been optimized to increase lethality (Carrasco, et al., p. 549)?
- Is there evidence of biofilm formation in the post-lethality step(s)/areas (Carrasco, et al., p. 551)?

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Aflatoxin contamination levels along the Kenyan dairy supply chain are related to husbandry practices and socio-economic factors

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Aflatoxin contamination of dairy feeds and milk was investigated in 8 Kenyan regions; Kwale, Kilifi, Nyandarua, Nyeri, Samburu Uasin Gishu and Nandi. The study was initiated to assess the knowledge and practices of dairy value chain actors as well as the prevalence and levels of aflatoxins (B1, B2 G1, G2 & M1) in dairy feeds and milk respectively. For this purpose, 180 milk samples were collected dairy farmers, milk traders and processors. Additionally, 250 feed samples were collected from dairy farmers, feed traders and feed millers. Feed and milk analysis for aflatoxin contamination were conducted using enzyme-linked immunosorbent assay (ELISA). Results showed presence of aflatoxin M1 in 123(67.8%) of the milk samples. Aflatoxin M1 contamination exceeded the recommended FAO/WHO 0.05µ/L in all milk samples, ranging from 1.1 to 107.3µg/L. 100 feed samples (40%) which were all dairy concentrates were positive for total aflatoxins of which 69 samples recorded above the 10ppb Kenya Bureau of Standards (KEBS) regulatory levels. All the forage grasses (n=80) tested negative for total aflatoxins while 30 % (n=70) of the crop residues tested positive for total aflatoxins. Linear regression revealed a significant association between feed handling practices and total aflatoxin and AFM1 levels. The results show high incidences of animal feed contamination along the dairy value chain which impacts negatively on human health. Regulatory measures need to be put in place to improve adherence to feed and milk safety practices across the value chain particularly in raw materials sourcing, manufacture and distribution of dairy meal. Government initiatives, effective surveillance systems, collaboration between the many stakeholders, research (particularly related to preventative measures), adequate storage facilities and capacity development and training of the stakeholders additionally, availability of information on feed and milk safety standards to dairy stakeholders needs to be enhanced to ensure safe feeds and milk.

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Quality Assessment of biscuit made from walnut/wheat flour

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The aim of this study was to determine the effect of incorporation of defatted walnut on the quality of buiscuit and increase the utilization of walnut. Walnut was defatted using hydrolic press method of oil extraction. Buiscuits were produced from the composite flour blends of wheat (Triticum spp) / walnut (Juglans regia) in the ratio of 100: 0, 90:10, 80: 20, 70: 30, 60: 40 and 50: 50 respectively. Consumer acceptability of the buscuits were determined using multiple comparism difference test by 10 judges. The sensory test was carried out under the following parameters flavour, texture, taste and colours. The sensory result reveal that composite buiscuit with 90% wheat flour and 10% walnut flour had the highest general acceptability by the panelists which implies there was no significant in the buiscuit made from from 90% wheat and 10% walnut flour and therefore was rated best amongst all the samples.

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Assessment of the cyanogenic potential, physico-chemical and microbiological quality of cassava flour produced in Ruhango and Kamonyi Districts

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Consumption of cassava products, which are not adequately processed, has been linked to diseases such as Konzo. The need to assess the cyanogenic potential, physio-chemical and microbiological quality of cassava flour in Kamonyi and Ruhango Districts was necessary. Flours from local processors of cassava and modern industries were screened for cyanogenic potential, physio-chemical and microbiological quality using official methods of analysis. The analytical results showed that the cyanogenic potential from wet processed cassava flours ranged between 0 and 10 ppm, which was within the EAC recommendations (10ppm). Cassava flour from chips (cocottes) processed by modern methods 1 and 2 had moisture content within the EAC recommendation of 13% (max). The results from local processing methods (1 and 2) showed high moisture content (19.3 – 26.2%) above that recommended by EAC. This explains the high microbial count (bacteria, 2.6 – 5.5 log CFU/g and coliforms, 2 – >1600 MPN/g) but fungal count was within the WFP recommend value of 5log CFU/g. The pH (6.19 – 7.49) and TTA (0 – 1.05%) for both methods (local and modern) indicated microbial activity taking place. The cyanide in cassava flour was within the permissible limit of less than 10 ppm, thus not a health problem. The microbiological quality of cassava flour in studied districts confirmed that the processing methods used did not follow the good hygienic practices and thus affecting safety of cassava flour. Use of tap water and modern driers for processing and close monitoring to ensure strict compliance is recommended.

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Nationwide prevalence of *E. coli* O157:H7 and shiga toxin producing *E. coli* (STEC) in Brazilian beef, 2015-2016

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A nationwide baseline survey was conducted in Brazil by the Federal Inspection Service, from the Ministry of Agriculture, Livestock and Food Supply (MAPA), to estimate the prevalence of *E. coli* O157:H7 and STEC (O26, O45, O103, O111, O121 and O145) in beef. The study was conducted from 2015 to 2016. The samples were collected in 82 abattoirs under Federal Inspection Service (SIF). The establishments were classified according to bovine slaughtered per day in: Small (S); Medium (M) and Large (L). The sampling involves collecting 60 thin slices from the external surface of beef tissues randomly selected, comprising at least 325 grams of beef trimmings. A total of 1.920 samples were analysed in official laboratories (LANAGRO) using MLG 5 analytical method. The results obtained were one *E. coli* O157:H7 positive sample and five non-O157 STEC positive samples. The non-O157 STEC serotypes detected were O45, O26, O111, O103. This information demonstrates the good quality and safety of the Brazilian beef and emphasizes the importance of the pathogen control programs to evaluate the dressing procedures and slaughter controls. Acknowledgements: Ministry of Agriculture, Livestock and Food Supply is acknowledged for providing data and for discussions regarding the monitoring and the use of the results.

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