INTRODUCTION TO GLUTEN MANAGEMENT

CONCERTED EFFORTS IN THE ARAB REGION

Annual Scientific Day

Military Laboratories for Quality Control

Jordan Armed Forces

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Outline

Approaches of Gluten Management Overall

Concerted Efforts Across the Arab Region

Role of (Food Allergen and) Gluten Testing

The Issue of Celiac Disease

Celiac disease is an autoimmune disorder, where individuals develop intolerance to gluten, present in foods such as wheat, rye and barley.

- The global prevalence of celiac disease:

  - App. 0.7% - 1.4% (Clin. Gastroenterol Hepatol. 2018 Jun;16(6):823-836)

The Issue: Celiac Disease

- Celiac disease is generally and observed in genetically susceptible individuals.
- Symptoms are related to the ingestion of the **gluten protein** found in **wheat and related grains**.
- **Initial Auto-Immune Reaction can Lead to Progressive deterioration** of the lining of the small intestine
- Individuals with celiac disease have an increased risk of developing other diseases including
  - osteoporosis,
  - lymphoma and type I diabetes mellitus.
  - increased risk of reproductive problems.
  - growth failure and delayed puberty in Children

- **The number of consumers following a gluten-free diet is however significantly higher - E.g. 25% in the USA**
- **The gluten-free products market is still booming with a CAGR of 8% - 9% (2024 – 2032).**

Interventions

- No cure possible to date to these conditions

- Avoidance of the Food where the Allergenic / Gluten Source Ingredient is Present, remains the main risk management strategy

- Preventive Controls and Accurate Information About Food Allergen Composition Are the Cornerstone of Food Allergen Risk Management Interventions

Codex Standards on Food Allergens

CCNFSDU: Codex Committee on Nutrition and Food for Special Dietary Uses

CCFL: Codex Committee on Food Labelling

CCFH: Codex Committee on Food Hygiene

Gluten-Free Requirements

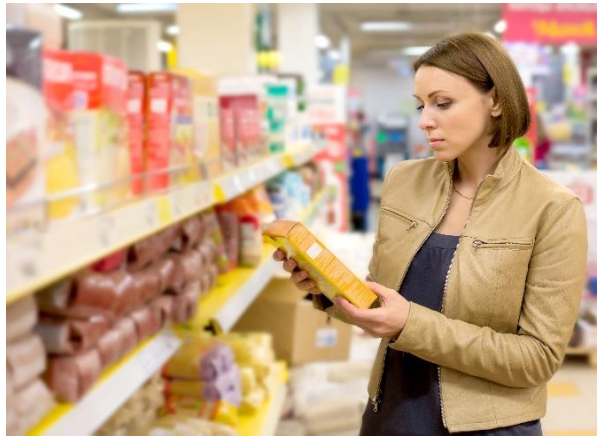
- ❑ All Codex Rules are Inspired from Codex CXS118-1979
- ❑ EU Commission Implementing Regulation (EU) 828/2014: defines “gluten free” (i.e. ≤ 20 mg/kg) and “very low gluten” (i.e. ≤ 100 mg/kg))
  - This also applies to non-pre-packed food (e.g. restaurants)
- ❑ U.S. FDA Final Rule for the use of “gluten free” if a product contains ≤ 20 ppm gluten
- ❑ Gluten Free Certification (like by AOECS – “crossed grain logo”)
  - Products containing ≤ 20 mg/kg gluten

Integrated Gluten Management

Gluten Checks along the food production chain





Grain Harvest and Processing

Procurement and processing of raw materials

Detection of contamination

Ingredient Production

Management of raw materials

and ingredients

for food producers

Incoming Goods, Storage, Production

Ingredients handling

Cross-contamination

Inline Control Production

Cross-contamination during production

Cleaning control

RIDA®QUICK Gluten quant. **New**

RIDA®SMART BOX

\+ Data management

ready-to-swab

RIDA®QUICK Gliadin

or

Samples to laboratory

Oats Industry: Gluten-Free Oats

Cross-contamination with rye and barley in addition to wheat

End-Product Control of Foodstuffs

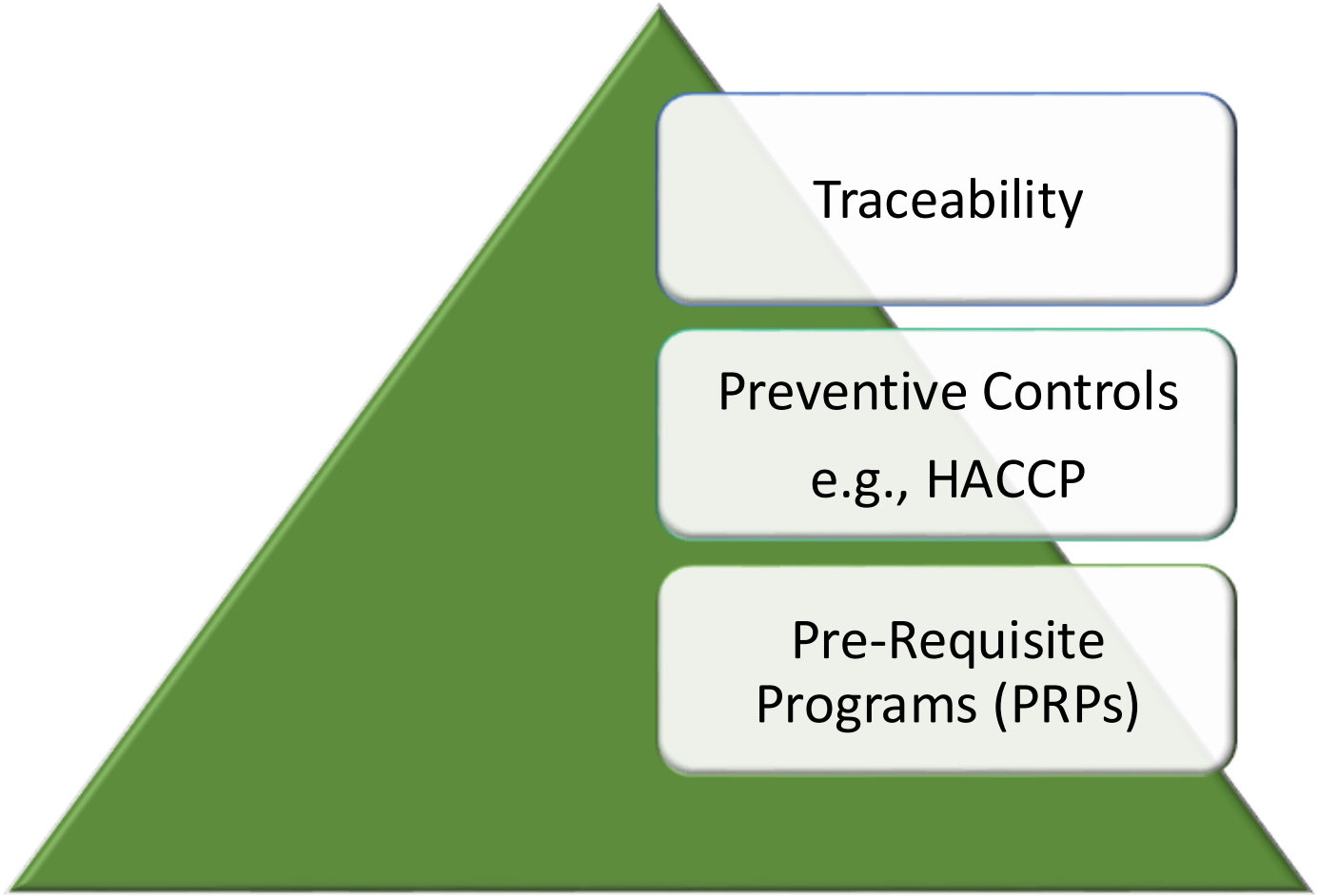
Consumer safety

Gluten Management: Integrated

Integrated Food Safety

Management Systems

Preventive Approach



Conditions for Gluten Free Labelling

Expectation

- Measures taken by Industry to remove Gluten and its sources from the foods called Gluten Free.
- Regulation has to consider Threshold values:
  - 10 mg/day seems acceptable based on latest scientific evidence
  - "a daily gluten intake of less than 10 mg is **unlikely to cause significant histological abnormalities**." In other words, it is anticipated that the majority of people with Celiac disease will not be negatively affected if they limit their gluten intake to less than 10 mg per day.

Catassi, C. Response to P.Collin et al, AmJ Clin Nutr, 2007; 86:260-9

Shaping a Collaborative Approach in the Arab Region

- To Promote Safe Food Alternatives for Celiac Individuals and their Families

- To Support Robust Regulatory Approach for Gluten Free Foods
  - Develop Enablers of Food Regulatory Interventions

Useful Codex Guidance

Gluten Free Labelling Standard

STANDARD FOR FOODS FOR SPECIAL DIETARY USE FOR PERSONS INTOLERANT TO GLUTEN

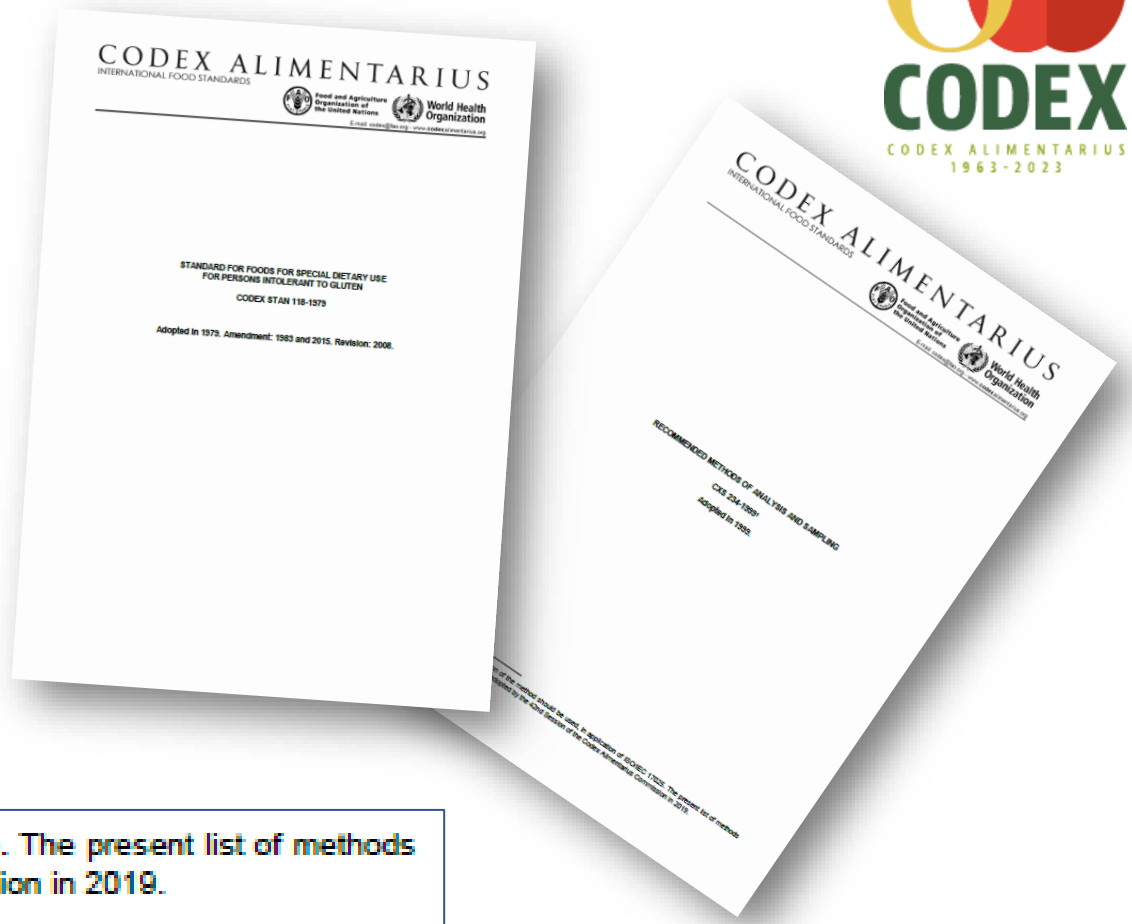
CODEX STAN 118-1979

Adopted in 1979. Amendment: 1983 and 2015. Revision: 2008.

RECOMMENDED METHODS OF ANALYSIS AND SAMPLING

CXS 234-1999[1]

Adopted in 1999.



[1] The most updated version of the method should be used, in application of ISO/IEC 17025. The present list of methods reflects the amendments adopted by the 42nd Session of the Codex Alimentarius Commission in 2019.

Codex Stan 118-1979: Amendment in 2015

2.1.1 *Gluten-free foods*

Gluten-free foods are dietary foods

a) consisting of or made only from one or more ingredients which do not contain wheat (i.e. all *Triticum* species, such as durum wheat, spelt, and khorasan wheat, which is also marketed under different trademarks such as KAMUT), rye, barley, oats[1] or their crossbred varieties, and the gluten level does not exceed 20 mg/kg in total, based on the food as sold or distributed to the consumer, and/or

b) consisting of one or more ingredients from wheat (i.e. all *Triticum* species, such as durum wheat, spelt, and khorasan wheat, which is also marketed under different trademarks such as KAMUT), rye, barley, oats[1] or their crossbred varieties, which have been specially processed to remove gluten, and the gluten level does not exceed 20 mg/kg in total, based on the food as sold or distributed to the consumer.

2.2.2 *Prolamins*

Prolamins are defined as the fraction from gluten that can be extracted by 40 - 70% of ethanol. The prolamin from wheat is gliadin, from rye is secalin, from barley hordein and from oats[1] avenin.

It is however an established custom to speak of gluten sensitivity. The prolamin content of gluten is generally taken as 50%.

CODEX
CODEX ALIMENTARIUS
1963-2023

Codex Stan 118-1979

5.2 Method for determination of gluten

Enzyme-linked Immunoassay (ELISA) R5 Mendez Method.

CSX 234-1999

PART A – METHODS OF ANALYSIS BY COMMODITY CATEGORIES AND NAMES

Gluten-free foods	Gluten	Enzyme-Linked Immunoassay R5 Mendez (ELISA) Method *Eur J Gastroenterol Hepatol* 2003; 15: 465-474	Immunoassay	I

CODEX ALIMENTARIUS

FAO/WHO Food Standards - Normes Alimentaires FAO/OMS - Normas Alimentarias FAO/OMS

Gluten Analysis in Codex Alimentarius

Codex Alimentarius Type 1 method for gluten analysis in food

Standard CXS 234-1999 (adoption from 2019)

R5 ELISA

Gliadin

Need to have a method that works on complex food matrices: e.g., processed foods

Questions to be Answered

❑Data Gathering to Support Application of Codex Guidance

- What is the Level of Exposure to Gluten, following a Gluten Free Diet in Arab Countries?
- Is the Codex Standard : 20 ppm cut-off Protective Enough?
- Is there enough supply of Alternatives to Gluten-containing foods

❑Promote Availability of Safe and Innovative Gluten Free Food Alternatives

Initiatives Underway

- ❑ Standardize Analytical Methods for Gluten Free Testing:
  - AOAC International Driven Approach (guided by Codex)
  - Arab Official Gluten Free Methods
- ❑ Data Supporting Food Consumption Information of Celiac Individuals and their Facilities
- ❑ Surveys of Gluten Occurrence in Gluten Free Foods
  - Either labelled or considered / assumed as such

Objective

Evidence Based Decision Making on Gluten Free Requirements in the Arab Region

Pre-Requisite for Success: Collaborative Approach


thank you
danke
謝謝
gracias
merci
obrigado
teşekkür ederim
go raibh maith agat
ngiyabonga
bedankt
dziękuję
sukriya
kop khun krap
terima kasih
mochchakkeram
감사합니다
شكرًا لك
তোমাকে ধন্যবাদ
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Баярлалаа
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