LOW-GERM DIET – EXPLOITATION OF REQUASUD'S MICROBIOLOGICAL DATABASE TO ASSESS RISKS

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INTRODUCTION

A neutropenic diet with many food evictions increases the patient's risk of malnutrition. Thus, a relaxation of the low-germ diet is desired, based on scientifically substantiated information. The Cliniques Universitaires Saint-Luc (CuSL) provide well-founded, targeted and scalable dietary recommendations to patients in the onco-hematology department, in order to minimize the risk of foodborne infections. The CuSL requested information about a list of foodstuffs (*e.g.* red fruits, mushrooms, tuna salad, pastries, …) to assess their possible introduction in the patient's diet. This approach requires knowing the levels of contamination of each foodstuffs, in order to assess their risk for immunocompromised patients.

The REQUASUD database, which contains the results of microbiological analyzes of >270,000 food samples, was used for this purpose. REQUASUD is a network of Walloon laboratories which have compiled their analytical results, since 1994, in a large searchable database.

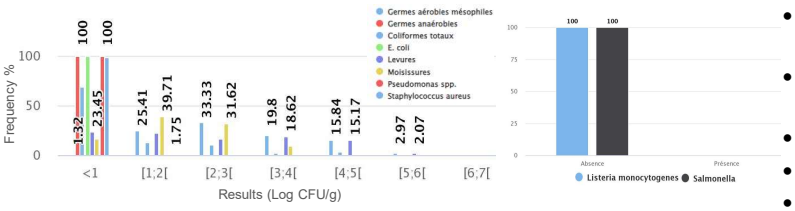
METHODS

For each food category, the data from the REQUASUD database were extracted using the REQUACONSULT tool (www.requasud.be).

The results interpretation was based on the global levels of contamination (total germs, yeasts, moulds, lactic acid bacteria) and on the possible presence of pathogenic or opportunistic germs (*Listeria monocytogenes, Salmonella* spp, *Staphylococcus aureus, Enterobacteriaceae*).

RESULTS FOR THREE FOOD CATEGORIES

Fresh fruits (303 samples)

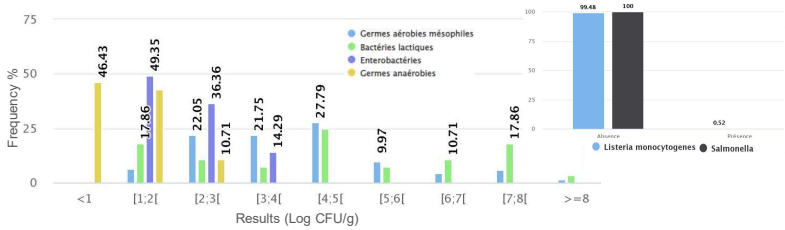


Interpretation

- **Total aerobic flora** in fresh fruits varies from 10 to 10^5 CFU/g, the highest levels being mainly constituted by **yeasts**.
- The concentrations in **coliforms** remain weak (<10^3 CFU/g) and no sample contained ***Escherichia coli*** in detectable amounts.
- The levels of **anaerobes**, ***S. aureus*** and ***Pseudomonas*** are all <10 CFU/g.
- Contamination by **moulds** remains weak, between 10 and 10^4 CFU/g.
- None of the samples contained ***L. monocytogenes*** nor ***Salmonella* spp**.

➔ **Fresh fruits, if intact and clean (washed or peeled), may be authorized for patients at low infectious risk.**

Tuna salad (355 samples)

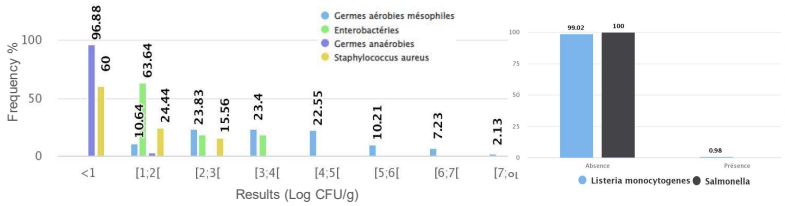


Interpretation

- The concentrations in **total flora v**ary greatly, up to >10^8 CFU/g. The high levels of contamination (10^4-10^8) seem to be due to the growth of **lactic acid bacteria**.
- *Enterobacteriaceae* concentrations vary between 10 and 10^4 CFU/g.
- The levels of **anaerobic germs** measured are all below 10^3 CFU/g.
- All the analysed samples were free of ***Salmonella*** spp, but 0.52% were positive for the opportunistic pathogen ***L. monocytogenes***.

➔ **Tuna salads must meet the following conditions: short shelf life and products should be pasteurized in the sealed packaging.**

Cream-based pastries (509 samples)



Interpretation

- **Total flora** concentrations vary greatly, from 10 to 10^8 CFU/g.
- ***Enterobacteriaceae*** concentrations vary between 10 and 10^4 CFU/g.
- 100% of the tested samples were free of ***Salmonella*** spp.
- About 1% of the samples analyzed were positive for ***L. monocytogenes***, which represents a significant risk for the neutropenic patients. This risico is inherent to artisanal products and can be mitigated by the use of industrial or home-made pastries (if good hygiene practices and short storage times are applied).

➔ **Due to the variability of the total flora and the risk of *L. monocytogenes*, artisanal cream-based pastries are not recommended.**

DISCUSSION

An expansion of the low-germ diet is necessary in order to improve the health and comfort of immunocompromised patients. In the absence of medical consensus and sufficient knowledge, this expansion must be done gradually and based on the available scientific data.

A valuable tool in this process is the use of REQUACONSULT to request the REQUASUD microbiological database: this online tool brings together >2,265,000 analytical results and provides better knowledge of the microbial risk associated with each category of foodstuffs.

Based on numerous extractions from the database, but also on bibliographic research and discussions with a committee of CuSL experts, substantiated recommendations were provided in the context of the expansion of diet precautionary measures.

Avec le soutien de la Wallonie