

Moving toward a Mediterranean diet to reach nutritional adequacy does not necessarily increase the exposure to food contaminants: a modeling approach in the French women population

A modeling approach in the French women population

BARRE Tanguy¹, VIEUX Florent², PERIGNON Marlène¹, CRAVEDI Jean-Pierre³, AMIOT Marie-Josèphe¹, DARMON Nicole¹

¹ Unité Mixte de Recherche (UMR) "Nutrition, Obesity and Risk of Thrombosis," Institut National de la Recherche Agronomique 1260 INRA, Institut National de la Santé et de la Recherche Médicale 1062 INSERM, Aix-Marseille Université, F-13385, Marseille, France.

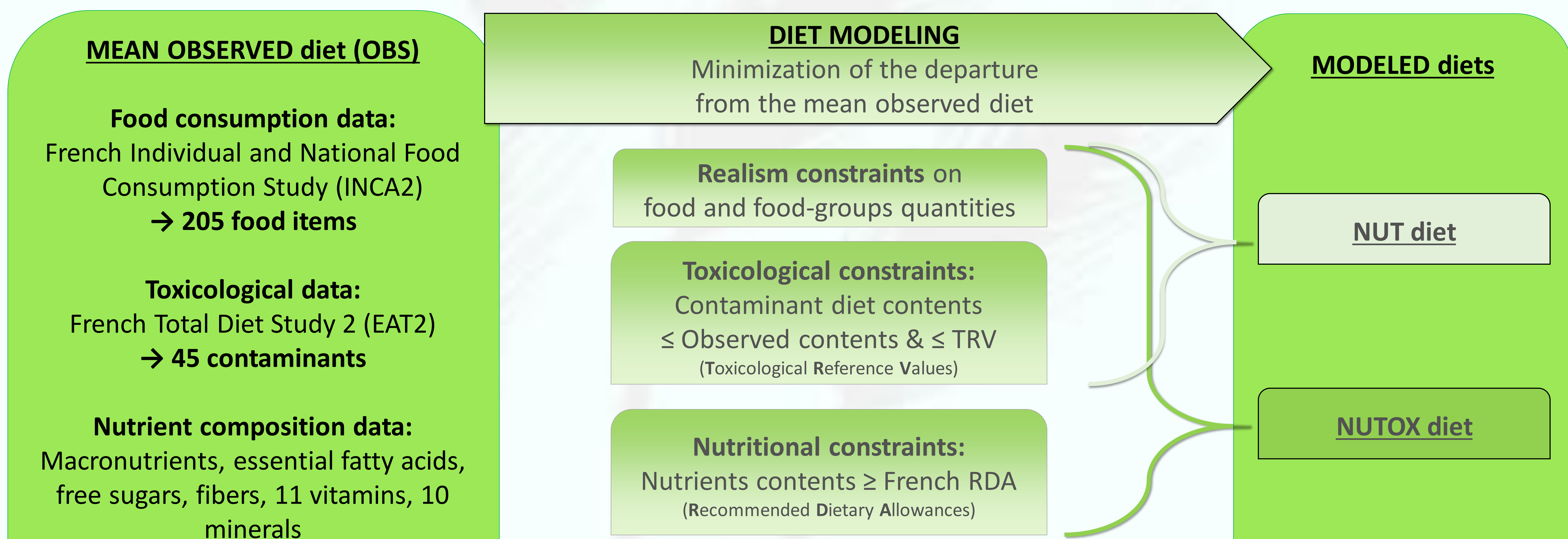
² MS-Nutrition, Marseille, France.

³ UMR 1331 TOXALIM, Institut National de la Recherche Agronomique INRA, F-31027 Toulouse, France.

Context and objective

Existing dietary guidelines do not explicitly or quantitatively take into account food safety considerations. The aim of the present study was to assess whether a nutritionally adequate diet would be compatible with food safety recommendations.

Methodology



Results

- **OBS diet:** contaminant contents were **below the Toxicological Reference Values**. **Recommended Dietary Allowances** were **not all fulfilled** (ω 3 fatty acids, fibers, vit. D, magnesium...) while **some nutrients were in excess** (saturated fatty acids, free sugar), typically of the **Western dietary pattern**
- **NUT diet:** as compared to OBS diet, the main dietary changes were:
 - ▶ **increases of fruit and vegetable (+100%), unrefined starches (+100%), and fish (+66%) (Fig.1)**. Mixed dishes, animal fats and meat decreased. Those dietary changes are characteristic of a move toward a **Mediterranean diet**.
 - ▶ **increases of contaminant contents**, while remaining below the TRV, were noticed for **non-dioxin like PCBs and Dioxin-like Compounds, cadmium, and few pesticides (Fig.2)**.
- **NUTOX diet:** As compared to NUT diet:
 - ▶ **fruit and vegetable, unrefined starches and fish still increased** in the NUTOX model, although in slightly lower amounts for fruit and vegetable (**Fig.1**). Diet composition **changes occurred mainly at the food item level** within food groups. For example, there was a switch from apple to pear within the fresh fruits family.

Fig1: Quantities of some food categories (g/d) in observed and modeled diets

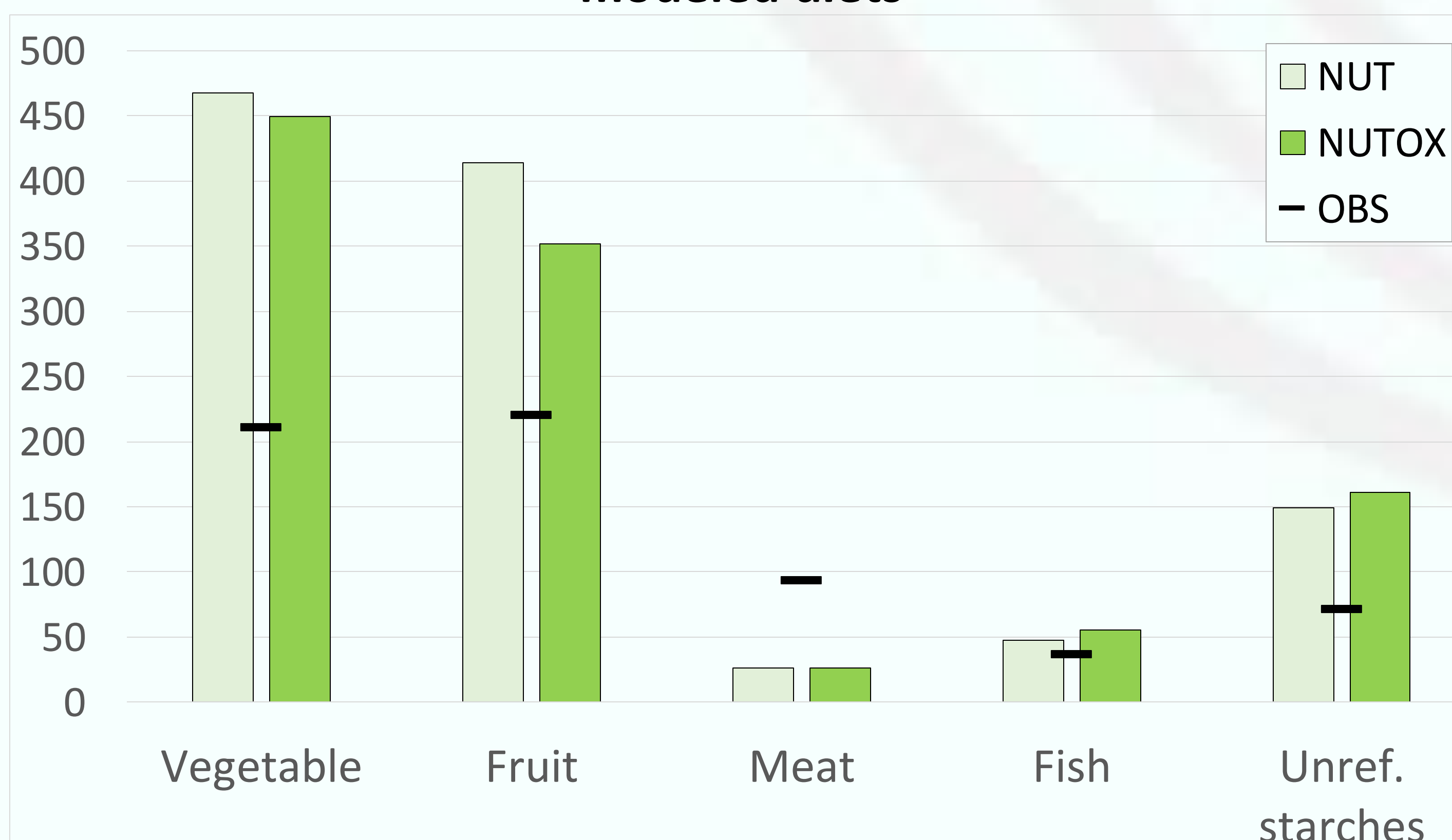
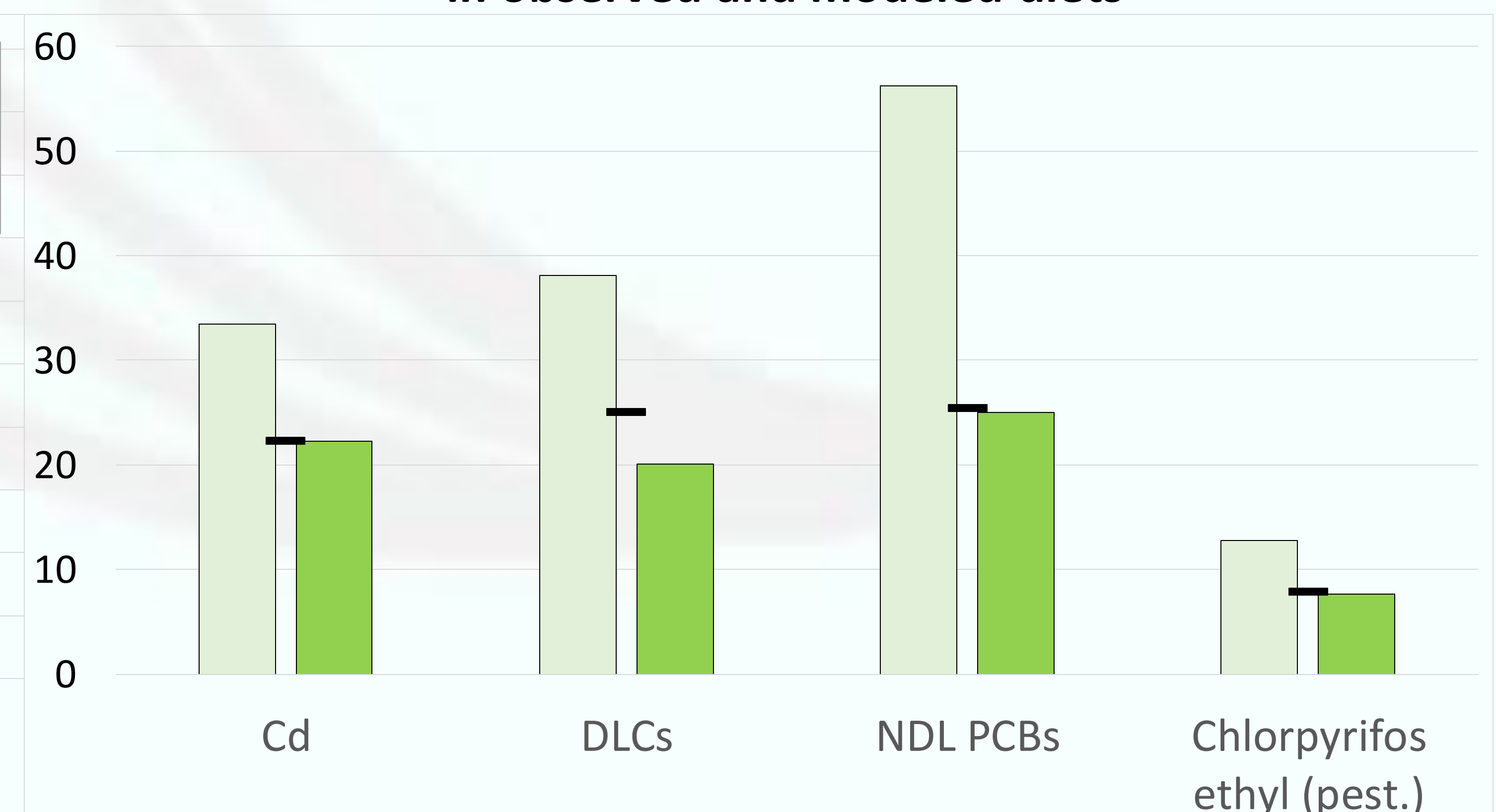


Fig2: Contents of some contaminants (%TRV) in observed and modeled diets



Conclusion

Diet changes needed to reach nutritional adequacy tends to fit with the Mediterranean diet but they might increase the exposure to some contaminants. Making specific choices within food-groups would allow reaching nutritional adequacy without increasing the contaminant content of the diet.