Hellenic Complex Systems Laboratory

Enteral Nutritional Design

Technical Report X

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WOLFRAM Demonstrations Project

Enteral Nutritional Design

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Search Terms: nutrition, nutrition therapy, enteral nutrition, nutrition design, nutrition formula, composition of foods, critical care, intensive care, medicine

Short Description of the Demonstration

Enteral feeding refers to the delivery of nutrition directly into the gastrointestinal tract, thereby providing part or all of a patient's caloric and nutritional requirements. To design an enteral nutrition formula, the respective quantities of up to six selected foods (a meat, a cereal, a dairy food, a vegetable, a fruit and an oil) are calculated. It is desired that their combination comply with user-defined specifications: total required calories (10–3000), fraction of protein calories (0.15–0.40), fraction of carbohydrate calories (0.15–0.40) and maximum total water content of the foods (1–3000 ml). The specifications are set using the sliders. The foods are selected using their respective menus. Each menu includes a "None" option.

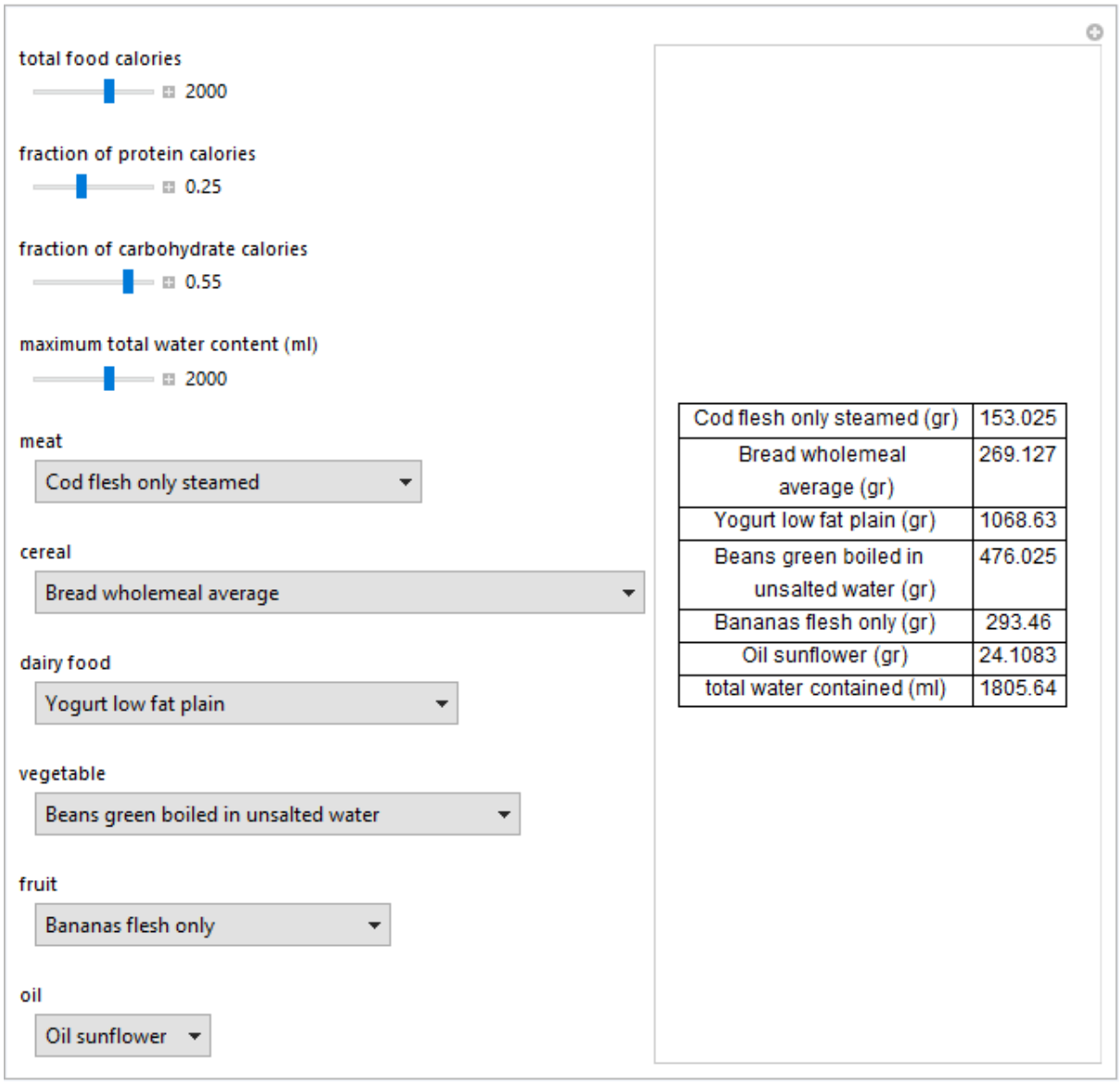

Figure 1: *Enteric nutrition formula, with the settings shown at the left.*

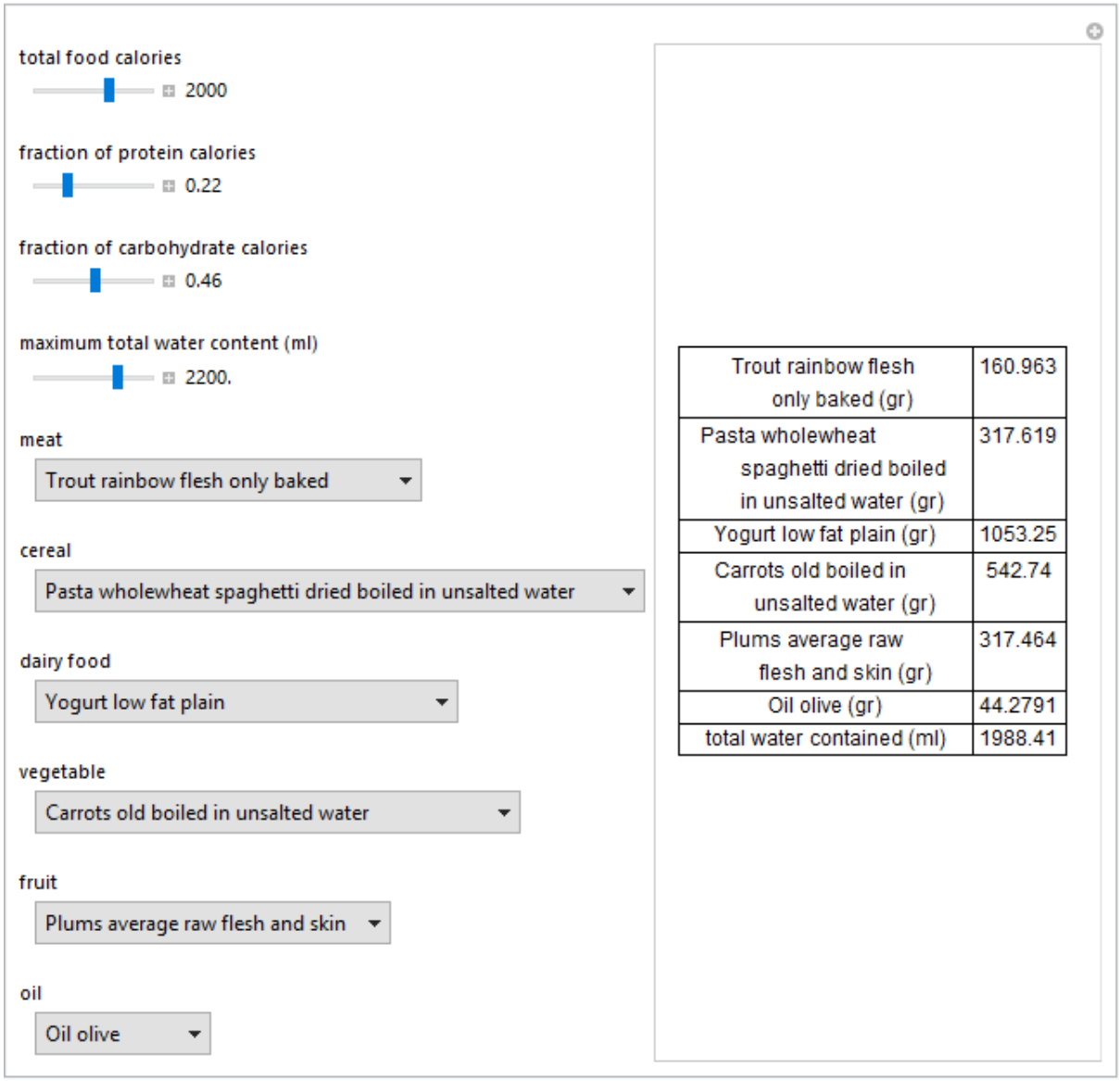

Figure 2: *Enteric nutrition formula, with the settings shown at the left.*

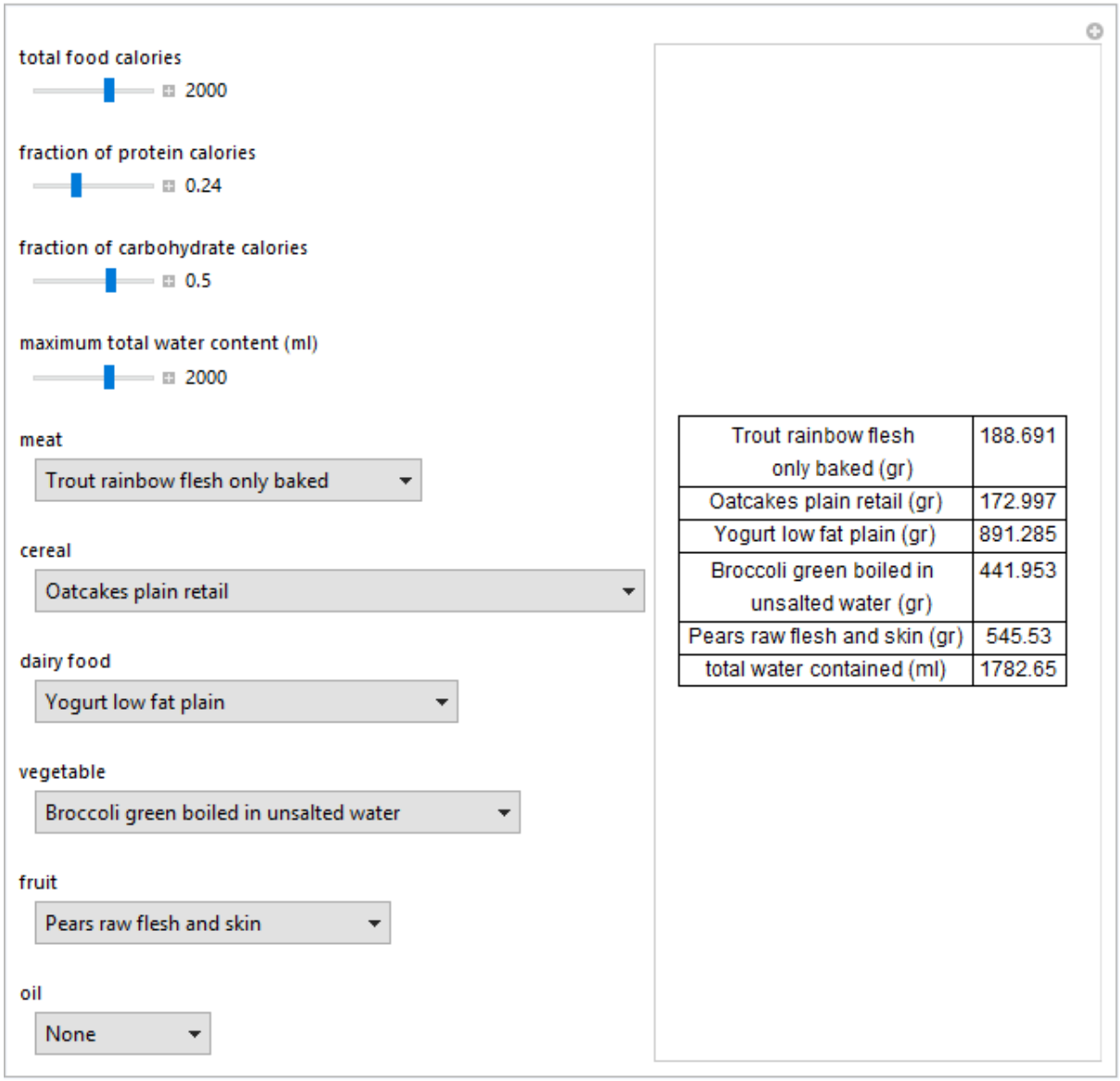

Figure 3: *Enteric nutrition formula, with the settings shown at the left.*

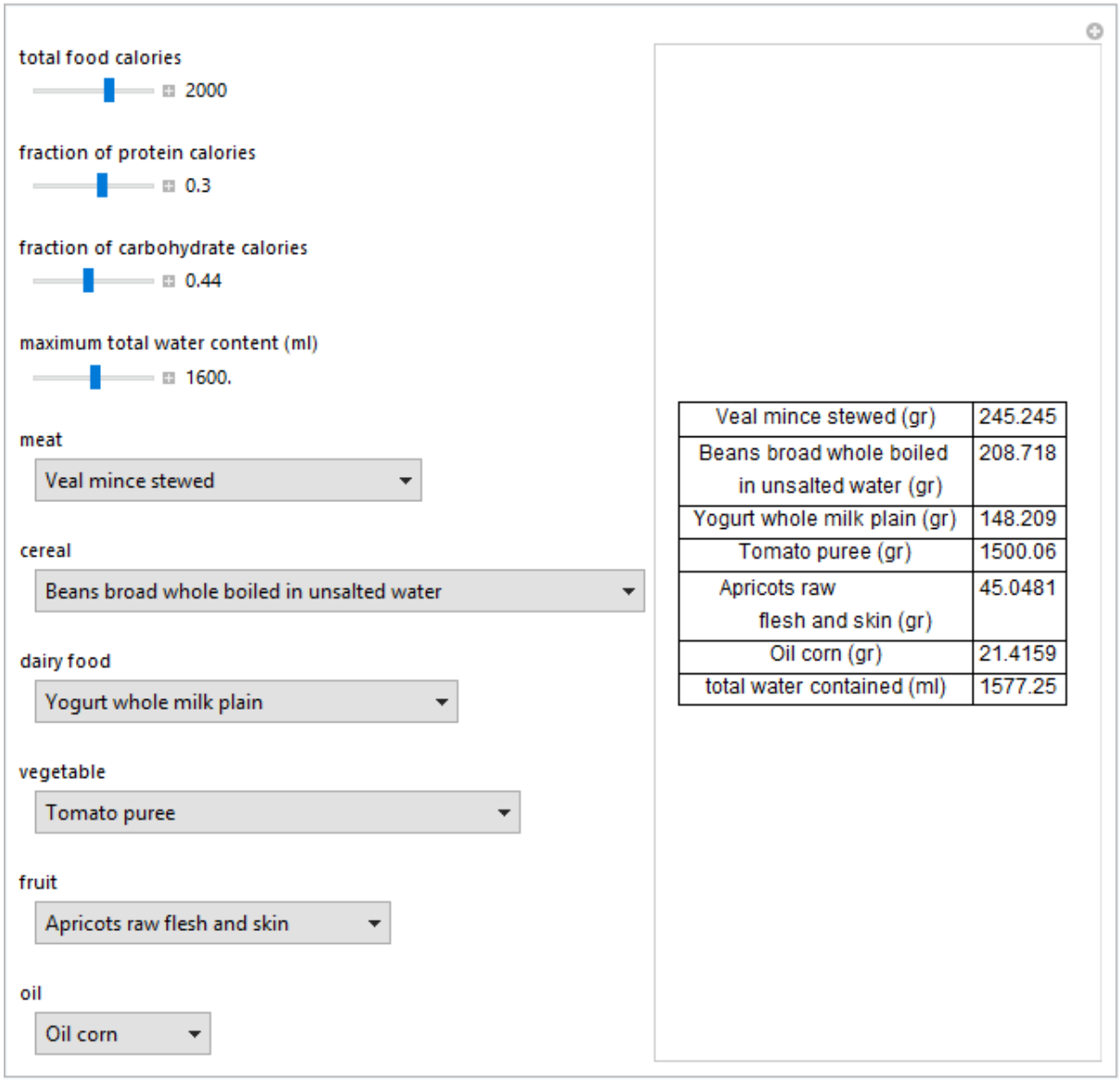

Figure 4: *Enteric nutrition formula, with the settings shown at the left.*

Details

This Demonstration shows a method for the design of enteral nutrition [1]. It includes the respective data of all the foods of the 2015 version of the Composition of Foods Integrated Dataset (CoFID), published by Public Health England (PHE) [2].

Therefore, the menus of the Manipulate function can be redefined to include any of the foods of the dataset.

The Demonstration is dedicated to the loving memory of George Koutsidis.

References

[1] R. Bankhead, J. Boullata, S. Brantley, M. Corkins, P. Guenter, J. Krenitsky, B. Lyman, N. A. Metheny, C. Mueller, S. Robbins, J. Wessel and the A.S.P.E.N. Board of Directors. A.S.P.E.N. Enteral Nutrition Practice Recommendations. *Journal of Parenteral and Enteral Nutrition*, **33**(2), 2009 pp. 122–167. doi:10.1177/0148607108330314.

[2] P. M. Finglas, M. A. Roe, H. M. Pinchen, R. Berry, S. M. Church, S. K. Dodhia, M. Farron-Wilson and G. Swan, McCance and Widdowson's The Composition of Foods. 7th summary ed., Cambridge, UK: The Royal Society of Chemistry, 2015.

Source Code

Programming language: Wolfram Language
Availability: The updated source code is available at:
https://www.hcsl.com/Tools/Demonstrations/EnteralNutritionalDesign.nb

Software Requirements

Operating systems: Microsoft Windows, Linux, Apple macOS and iOS
Other software requirements: Wolfram Player®, freely available at: https://www.wolfram.com/player/ or Wolfram Mathematica®.

System Requirements

Processor: x86-64 compatible CPU.
System memory (RAM): 4GB+ recommended.

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https://demonstrations.wolfram.com/EnteralNutritionalDesign/

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