# Recipe Nutrient Analysis

## Best practices for calculation and chemical analysis

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# Table of Contents

## Recipe Nutrient Analysis: Best practices for calculation and chemical analysis

# 2 Introduction to Nutrient Calculation

Calculating the nutrients in a recipe involves determining the nutrient content of exact amounts of specific ingredients and then adjusting for preparation or cooking technique. Calculated analysis requires knowledge, judgment and diligence – not to mention standardized recipes, a reputable nutrient analysis software program, and awareness of reliable databases and resources.

## Approaches to Calculated Analysis

Calculated nutrient analysis falls into one of two methods:

- **Adjusting values of *raw ingredients***. In this scenario, the initial information used is based on raw ingredients; these values are subsequently adjusted to reflect changes that occur during cooking or processing (such as fat and moisture retention and/or loss). Some nutrient analysis software programs (as discussed later in this chapter) have the ability to adjust for yield and retention, while others do not. If the software you are using cannot account for cooking and processing changes, you must do these calculations manually. It is inappropriate to use values for uncooked ingredients when analyzing cooked foods. (See Chapter 7.)

- **Using values of cooked ingredients**. In this scenario, no adjustments are required because all ingredient information is based on cooked ingredients. In this instance, add the nutrient values of the cooked ingredients and adjust the yield to generate the edible portion size and corresponding nutrient values. Ingredient amounts are entered using the cooked weight.

Based on these two methods, calculated analysis is appropriate in the following three scenarios:

1. Information for all ingredients is available and the recipe does not involve any cooking or processing that would result in a loss or gain of moisture, fat or product yield.

2. Reliable information is available on each of the raw ingredients, and calculating for the effects of cooking and processing is not only possible (either manually or automatically by the software), but relatively straightforward.

   Because it can be difficult to account for changes that occur during cooking and processing, chemical analysis is recommended over calculated analysis for fried items, marinated ingredients, braised ingredients, seasoned and cooked proteins, house-made stocks

and reduced sauces, pickled and fermented foods, and 100% juices for which no data can be found. Other methods exist for estimating the nutrients in items like this, but none of them are without limitations. (**See Chapter 4**.)

3. Information for all ingredients is available in the cooked state; no calculation for cooking or processing effects is needed. In this case, all ingredients in the recipe would be expressed in cooked weights. This scenario, however, is highly unlikely.

Some recipes may not fit neatly into the categories outlined here. In fact, one recipe may use an ingredient that is not cooked, an ingredient that can easily be adjusted to account for cooking losses, and an ingredient that requires chemical analysis. In these cases, determine the best approach for each ingredient in the recipe and for the recipe as a whole. The approaches can be complementary and used in combination.

## Resources Required

Calculated analysis requires a professional nutrient analysis software program, a standardized recipe and nutrient values for each ingredient.

### Appropriate Nutrition Software

Software is your most important tool in conducting calculated analyses. Many nutrient analysis programs are pre-populated with ingredient data and allow you to adjust for cooking and processing rather than making these calculations manually. Most allow you to generate a variety of reports, including Nutrition Facts Panels, ingredient statements and allergen information. To choose the software that best suits your needs, consider cost, capabilities and compatibility. Visit the websites of major software companies, download their demo versions and try analyzing some recipes. Here are a few questions to guide your evaluation:

## Cost

- What is the initial cost of the program?

- Are there ongoing licensing fees?

- How many users are permitted with each license?

## Capability

- Do you need software that does nutrient analysis only, or do you want related applications that perform other functions, such as ingredient statements and allergen assessment?

- Is the software pre-populated with the most up-to-date USDA data? Is there a process for updating data? How often? Is there an extra cost associated with updates?

- Does the program contain all the nutrients or other food components you need?

- Are you able to easily search the database for ingredients or recipes?

- Is the nutrient data in the database unrounded?

- Is the program populated with ingredient data from other countries, if needed?

- Is it possible to add information you would like to track, such as whole grains, gluten or sulfites?

- Can fat and moisture losses or targets be calculated, or will you need to do this work manually?

- Are ingredient name fields large enough to permit meaningful descriptions?

- Can you duplicate an existing recipe and save it with a new name?

- Does the program allow documentation of data sources within the database?

- Can you insert notes about your calculations?

- Is there an audit feature that allows you to track changes?

- Are there due diligence checks?

- Are there fields available for important vendor information or internal product numbers?
- Will the program calculate food choices (exchanges) for meal planning?
- How many items are in the database?
- Does the database contain specialty ingredients?

**Compatibility**

- Do you use a Windows or Mac operating system? A networked system? What are your program's hardware requirements?
- Is the program easy to use?
- What support is available? Online, telephone, on site? Is there a cost for support?
- Does the program provide the reporting functions you need? Are the reports easy to understand?
- Can you generate Nutrition Facts Panels in English and in Spanish?
- Can the Canadian Nutrition Facts Panels be generated in English and French?
- Can data easily be imported and exported to meet your needs, for example in the Excel format?
- If needed, can you give some users "read only" access and other users "read and write" access?
- Can you add an unlimited number of foods to the database?
- Can you populate and organize your recipes in a logical way that works for you?

# Nutrient Analysis Programs

If you plan to make recipe analysis part of your practice, you will need the right tools to ensure accuracy. Although you may find a number of free resources on the Internet, these tools are not recommended for professional recipe analysis as many are limited or provide incomplete data.

As this book went to press, a number of nutrient analysis programs suitable for professional use were available from a variety of companies. The list below (Table 2.2), although not exhaustive,

can get you started in your search for a software program that meets your needs and budget. Note that recipe analysis for school nutrition recipes must be completed using software approved by USDA. A list of approved software for school nutrition can be found at http://healthymeals.nal.usda.gov/menu-planning/nutrient-analysis-software-approved-usda/nutrient-analysis-software-approved-usda.

## Table 2.2 / Nutrient Analysis Software Programs and Information

| Software Program | Company website |
|---|---|
| DINE Healthy 7 | www.dinesystems.com/products.php |
| EGS CalcMenu | www.eg-software.com/en |
| ESHA Food Processor® SQL | www.esha.com |
| ESHA Genesis® R&D | www.esha.com |
| Evolution Nutrition® | www.evolutionnutrition.com |
| NutriBase | www.nutribase.com |
| Nutrihand Pro | www.nutrihand-inc.com |
| Nutritional Computing Concepts | www.ncconcepts.com |
| Nutrition Analysis Tool (NAT) | www.myfoodrecord.com/mainnat.html |
| The Nutrition Company—FoodWorks | www.nutritionco.com/FoodWorks.htm |
| NutritionData | nutritiondata.self.com |
| Nutritionist Pro™ | www.nutritionistpro.com |
| MenuCalc®—nutrition analysis for restaurants | www.menucalc.com |

*The authors do not endorse any program. They are listed here for your convenience.*

### ADDITIONAL RESOURCES

- International nutrient analysis programs with a short description of their capabilities – www.nutrientdataconf.org/indd
- 2011 review of nutrient analysis software -- www.nutrition411.com/clinical-nutrition/private-practice/item/28290-nutrition-assessment-and-recipe-analysis-applications
- A review of the quality of nutrient data available in various software programs – www.ncbi.nlm.nih.gov/pubmed/2058591
- Buzzard IM, Price KS, Warren RA. Considerations for selecting nutrient-calculation software: evaluation of the nutrient database. Am J Clin Nutr. 1991;54:7-9 – http://ajcn.nutrition.org/content/54/1/7.full.pdf
- Stein K. It all adds up: nutrition analysis software can open the door to professional opportunities. J Am Diet Assoc. 2011;111:214-218 – www.andjrnl.org/article/S0002-8223(10)01990-5/pdf