

Protein Wars Part 3 of 4

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☀ Protein quality issue taken to court

In August of this year, an Illinois court slammed down a US consumer class action complaint that several of Kellogg's brands were promoting a protein quantity that included "poor" (meaning incomplete) protein. [Illinois court slams down consumer complaint re: Kellogg/ Kashi misleading on-label quantitative protein claims.](#) The court maintained that consumers are expected to understand that not all food protein is created equal, and, failing that, the FDA is to be petitioned. "...if Plaintiffs believe that a reasonable consumer would assume that all proteins are created equal, and that any products marketed as containing a certain quantity of protein provide identical protein-based health benefits, they are free to urge the FDA to amend the regulations or to challenge the agency's rules as inconsistent with its statutory mandate."

☀ US legislation does, indeed, address this

Since 1993, [21 CFR 101.9\(c\)\(7\)\(i\)](#) has required that "A statement of the corrected amount of protein per serving...calculated as a % of the RDI or RDV for protein...shall be given if a protein claim is made for the product" [or marketed to infants or children ≤ 3 yoa.] The salient word in the legislation is "corrected", meaning that only complete, high-quality protein may be quantified in the protein claim and, in the presence of a protein statement, in the Nutrition Facts label.

☀ Getting to "corrected"

The determination of dietary protein quality has challenged nutritional scientists for decades, and there is no sign that the conundrum is soon to be resolved. Dietary protein contains both essential amino acids (EAA) and non-essential amino acids, the former being those which the body cannot synthesize. Since plant proteins do not contain all EAAs in the required proportions, complementary plant-based proteins need to be selected to offset individual amino acid deficiencies. The result is complete — or in the FDA's terms — "corrected" protein. For vegans, this is a daily task, as the FDA has cautioned ([Federal Register Vol. 58, No.3, January 6, 1993](#)): "Because excess amino acids are not stored in the body, humans need a constant supply of good quality dietary protein to support growth and development."

☀ The FDA launch of PDCAAS – Protein Digestibility Corrected Amino Acid Score

The [PDCAAS](#) methodology was debated in the public consultations leading up to the 1993 iconic Nutrition Facts label. The FAO/WHO 1990 human amino acid profile was regarded as the standard. Prior to that, the FDA relied upon the [Protein Efficiency Ratio \(PER\)](#), a rat-feeding procedure in which "...the rate of growth of [...] rats under standardized conditions provides a reliable measure of the value of dietary protein; thus PER is the gain in body weight divided by the amount of protein consumed". Basically, a control group of rats is fed casein - the Rolls-Royce of dietary protein - while a test group of rats is fed the test food. The weight gain of the test group over the control group, per gram protein consumed, is the food's PER. The FDA reasoned: "The PDCAAS is based on human amino acid requirements and [...] is inherently more appropriate for evaluating the protein content of foods intended for human consumption than the PER, which is based on the [...] requirements of the rat".

☀ Infant food protein quality based on PER

The FDA retained the PER for protein quality assessment of infant food, explaining that the one and only reference point - the optimum amino acid profile of human breast milk - is elusive, as put forth by the NIH: [A dynamic, bioactive fluid](#), human milk changes in composition from colostrum to late lactation, and varies within feeds, diurnally, and between mothers." The FDA reported that comparative reviews indicate that the true digestibility of a variety of foods is similar between humans and rats.

☀ Related activity and moving targets

In the 2016 modernization of the Nutrition Facts label, the FDA rejected the updated FAO/WHO 2007 amino acid profile, in favour of the 1990 version, maintaining that the former did not adequately address the protein needs of pre-school age children. The FAO/WHO 2013 amino acid profile changed "Essential" to "Indispensable", for IAA. Health Canada, which has used PER exclusively, has indicated consideration of the PDCAAS methodology.