

# nature structural & molecular biology

## Science or science fiction?

What if you could have good health, lots of energy, a youthful appearance, and feel great—would you? Why of course you would. And that is why hundreds of companies with the help of as many marketing agencies have taken advantage of the average consumer who would like to look better, feel better, have a cleaner home and still have plenty of leisure time. Some offer a single product that can fix all your woes, by fixing the seven signs of aging or by killing 99.9% of germs fast, reminiscent of the vaudevillian turn-of-the-century cure-all elixirs. Others use a more ‘scientific’ approach, using terminology (often ineptly) that can amuse the science-savvy but may sound pretty convincing to the layperson. There are the shampoos and conditioners with “amino-proteins” (histidine and a tryptophan derivative) to replenish the ones that supposedly get stripped from the hair daily, the anti-viral tissues with sodium lauryl sulfate (SLS) as an active ingredient, and the skin cream that has caffeine to purportedly “wake the skin up”.

In contrast to the over-the-counter drugs available today that have been well-studied in basic and pharmaceutical research, the claimed benefits of many of the products not in the cold care or pain relief aisles, such as the nutritional supplements, personal hygiene, and beauty products do not require rigorous scientific proof. So, how do we know what we’re getting? And how do we know we’re getting what we want?

It used to be that if you needed a prescription filled or were looking for a recommendation to treat an embarrassing dandruff problem, you would go to the local chemist and solicit advice from Dr. Smith or John working behind the counter. Now, with the ever increasing presence of the one-stop-shopping monoliths, the drugstores or supermarkets where you can get more than just your drugs and groceries, you see fewer and fewer friendly faces behind the prescription counter and more and more aisles of products to choose from.

With the number of beauty and hygiene products available to choose from increasing by the minute, it’s not surprising that the consumer has difficulty making a decision. In the United States alone, personal cosmetics are a \$35 billion dollar industry. The absence of strict regulation or validation for the claims made on many of the product labels makes it even more difficult to make an informed choice. The average person doesn’t have the time to educate themselves on whether they really need anti-bacterial soap to wash their hands or SLS-containing tissues to blow their nose—nor should they have to. Isn’t washing your hands frequently

with regular soap enough, and isn’t SLS basically soap, anyway? While the rationale for some of the products is easy to comprehend, even someone with a PhD in biological sciences may have a hard time figuring out why they might want grapeseed extract in their facial lotion or what the benefits might be of using beta hydroxy-containing products as part of

their skincare regime. What happened to just needing to smell good and having smooth skin?

Many of these products are successful in the marketplace and have been shown through use to have real benefits, despite the fact that the science behind them has not been clearly demonstrated. But what about, for example, the men’s shampoo that contains a “360° molecular complex” to coat and thicken hair or the caffeinated skin cream? It’s difficult to envision how these products are supposed to work, and it’s claims like these that make the consumer wary about almost every product out there.

Things in the nutritional supplement aisle are equally suspect. Dietary supplements form a \$19.8 billion industry in the US, according to the *Nutrition Business Journal*. While the need for multi-vitamins and other daily vitamin supplements is well accepted, particularly for children and the elderly, the supplements for weight-loss and sports

nutrition (read “diet pills” and “weight-gainers”) fall pretty clearly into the questionable use category. Remember the fen-phen craze and the ensuing backlash when it was found to have connections to heart disease? The issue is periodically raised about whether these products should be regulated and approved in the same way as medication. Currently, the FDA is responsible for taking action against any unsafe dietary product once it reaches the market.

While it’s obvious that some form of regulation or oversight is needed for many of these products prior to their release into the marketplace, whose responsibility should it be to verify the dubious claims? And if the manufacturers comply by publicly validating the claims made on their labels, will the benefits of knowing the true nature of a product outweigh the increase in cost the consumers most likely will bear?

The phrase ‘caveat emptor’, which roughly translates into ‘let the buyer beware’ means that it is up to the buyer to find out that what they are getting is indeed what they want. While this is something that can be accomplished with the help of experts for life’s major purchases, such as a home or a college education, it is exceedingly confusing for the every day purchases that relate to home and healthcare. For now, all we can do is try not to get lost in the aisles. ■

