## Stay Smart!

Do smart drugs **work**? In lots of ways, yes.

But do they work as well as smart-drug proponents claim? Not *necessarily*.

Because even though users rave about the substances' brain-boosting effects, many researchers think that at least some are only revved-up by a placebo effect—plain-old wishful thinking.

Doubters point to the fact that intelligence and creativity have strong genetic roots that aren't easily altered. And the sheer complexity of the brain and its component parts makes simplistic thinking seem dumb when it doesn't seem dangerous.

For now, there's limited evidence backing claims for the "hard" smart drugs. Studies based on Alzheimer's patients and other victims of brain trauma show promise, but researchers warn that those effects may not translate to healthy users. Drugs can't fix what isn't broken.

So for the time being, the smartest way to take smart drugs is with a grain of salt and a gallon of caution. Smart nutrients probably won't hurt, but it may be a good idea to wait for researchers (who earned their smarts the old-fashioned way) to confirm the harder drugs' effectiveness.

If and when they do, be careful then, too—or you might get crushed by the crowds outside the drug store. ■

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# SMART DRUGS
## VITAMINS & NUTRIENTS

## Food for Thought

A Do It Now Foundation Publication by Jimmy Magahern

## Get Smart!

***Wise up. Think fast. Get smart!***

At one time or another, we've all had those words hurled at us—or we've murmured them to ourselves in moments of doubt.

Such comments don't always work, but they *do* reflect something basic in us all: a desire to turn on automatic insight and instant intelligence at the drop of a pointy hat.

That's why it's not surprising that, in trendy articles and conversations these days, the ancient admonition has a new twist: If you really want to get smart, get with it—and get turned on to one of the new substances that are being promoted to help you do just that.

***Heady question:*** *Can mental agility be amped up via the use of smart drugs and nutrients?*

They're called "smart drugs" by the media, "nootropics" (from the Greek words for "acting on the mind") and "cognition expanders" by researchers and students of the new art of getting smart.

But no matter what *else* you call them, call smart drugs a hot topic these days—and one that seems a sure bet to stay hot from now on.

**How** hot? *Very* hot, according to trend-spotters.

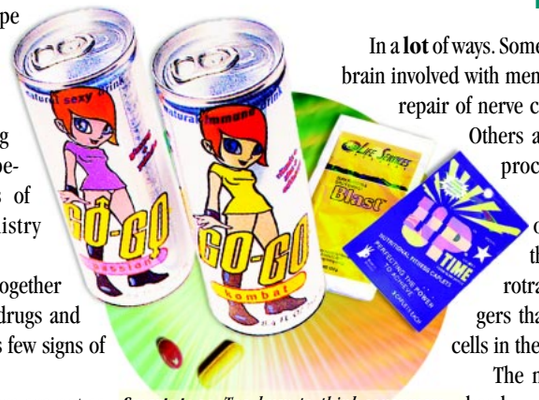
In fact, *Fortune* magazine has even pegged smart drugs as a billion-dollar industry of the not-so-distant future.

On the other hand, if all of this smells vaguely of snake oil and late-night TV infomercial hype to you, then you're not alone.

That's one reason researchers are turning their focus to the "smartness" of smart-drug regimens and the media has begun checking out the claims of smarter-living-through-chemistry proponents.

That's also why we've put together this pamphlet. Because smart drugs and nutrients are a force that shows few signs of fizzling.

And since the facts about them are not as simple—or as clear-cut—as enthusiasts would have us believe, we'd all better start getting smart about smart drugs—fast.




***Smarts to go.*** *Too-busy-to-think consumers can buy pre-mixed smart drinks and convenience-store supplements. But how well — and how safely — do they work?*

**Fortune** magazine has pegged smart drugs as a **billion-dollar** industry of the not-so-distant future.

### What are smart drugs?

The substances loosely known as "smart drugs" are a biochemical mixed bag: vitamins, herbs, nutrients, and prescription drugs that share one key feature: their advocates' claims that they enhance memory, creativity, alertness, learning, or physical performance.

Some of the drugs first came under serious scrutiny as possible treatments for aging-related mental decline.

Others—including the B vitamins and such amino acids as phenylalanine—have been tried over the years to treat the psychopharmacological fallout of drug abuse.

Still others, like melatonin and DHEA, are synthetic versions of natural hormones which, when taken as supplements, are said to optimize physical and emotional well-being and mental performance.

Other "smart" substances, such as ginseng and ginkgo biloba, are among the oldest herbal medicines known.

### How do they work?

In a **lot** of ways. Some increase blood flow to areas of the brain involved with memory. Others speed the growth and repair of nerve cells in the central nervous system. Others affect mental functions by altering processes that modify brain activity.

Probably the most-noted effect of smart drugs involves changes in the quantity and quality of neurotransmitters, the chemical messengers that convey impulses between nerve cells in the central nervous system.

The most common way of feeding our heads—and our neurochemistry—is by regularly loading up on the four basic food groups, along with such socially-approved additives as coffee, tea, or Jolt® Cola.

"Smart" drug users go a step further, hoping that mega-doses of benign chemicals can raise brain levels of the precursors the body needs to assemble such neurotransmitters and otherwise fine-tune mental and biological processes.

## Are smart drugs natural?

Some are. And we've known about them for a long time.

Take fish, for example. We've all heard fish called "brain food," and it looks like it isn't called that for nothing. There's evidence that seafood bolsters the brain through a nutrient called *dimethylamino-ethanol*, or DMAE. In animal tests, DMAE has been shown to improve memory and learning, increase energy levels, and elevate mood.

Other "smart" foods and nutrients seem to work in similar ways—by driving up brain levels of fuel needed for neurotransmitter replenishment.

## How many smart nutrients are there?

In general, smart nutrients fall into three basic groups:

**Diet supplements.** Many users start the day with a balanced breakfast of such supplements as vitamin B-5 and choline. They're converted in the brain to acetylcholine, a neurotransmitter that figures into memory and learning.

**Herbs.** Ginseng, ginkgo biloba, and gotu kola—the three G's of ancient Chinese medicine—are among the most commonly used "smart" herbs and may sharpen memory and concentration by boosting blood flow in the brain.

**Amino acids.** Leading players in the smart drug diet, amino acids such as phenylalanine and tyrosine serve as building blocks for body proteins and the transmitters that regulate arousal, concentration, and energy.

As we pointed out, we all take in smart nutrients every day in the foods we eat. But most smart drug-folk see virtue in excess, and augment their supplies with supplements.

Then again, some turn to the "hard stuff"—prescription drugs and black-market elixirs that are purported to maximize brain power.

## What's 'hard' about them?

It's hard to pigeonhole them, for one thing. And it's harder still to predict their potential actions and side effects.

Because unlike their kinder, gentler nutrient neighbors, these chemicals are often powerful pharmacological agents that produce a variety of far-reaching effects.

In fact, most "hard" smart drugs are used medically to treat specific diseases and medical conditions—from dizziness and age spots to injury-related brain damage or Alzheimer's disease.

## How are they different?

They're different in lots of ways. For starters, unlike the kinder, gentler buzz often linked to natural products, some smart drugs trigger full-fledged psychoactive effects. And instead of just providing bigger/better building blocks for the brain, some smart drugs are believed to alter the way the brain puts those blocks together.


***Thinking caps.*** *"Smart" nutrients may be big business (and getting bigger all the time), but worriers wonder if they also carry big risks.*

Topping the list of the commonly-used "hard" smart drugs are:

**Vasopressin (Diapid®).** A pituitary hormone marketed as a nasal spray to improve bladder control in diabetes, it also triggers release of acetylcholine.

**Hydergine.** One of the most widely-used treatments for senility, hydergine is believed to stimulate nerve cell growth and protein synthesis in the brain.

**Piracetam (Nootropyl®).** Widely used in Europe to treat alcoholism, senility, stroke, and Alzheimer's disease, piracetam has no approved medical use in the U.S. today, according to the Food and Drug Administration. The drug is believed to aid development of new brain cell receptors.

Most "hard" smart drugs are legal—but hard to come by. Since they're prescribed for specific medical conditions, doctors usually won't recommend them merely to treat curiosity about their alleged "smart" effects.

Others can be obtained—often legally—through international pharmaceutical suppliers.

A variety of web sites have made information about necessary procedures and likely distributors easily accessible, fueling the explosion of interest in "smart" chemical agents in recent years.

Unlike the kinder/gentler buzz often linked to natural products, some smart drugs trigger full-fledged psychoactive effects.

## Are smart drugs safe?

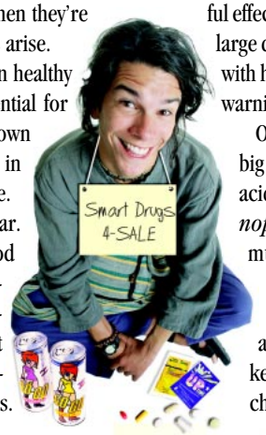
Yes, no, and not necessarily.

Compared with most medications, even "hard" smart drugs seem relatively side-effect free when taken in prescribed doses for approved medical uses.

It's when they're not taken as directed or when they're taken to ward off hypothetical risks that worries arise.

Few studies have tracked the drugs' effects in healthy users. And researchers wonder about the potential for problems among smart-drug pioneers gulping down untested combinations of chemicals—often in doses exceeding those approved for medical use.

Problems linked to smart nutrients are similar. Because it *is* possible to get too much of a good thing. Large amounts of some nutrients, particularly amino acids, can add as much to the workload of the liver and kidneys as a similar amount of food. And some vitamins—particularly vitamins A, D, E, and K—can be harmful in high doses.




Other risks center on the way the products are sold, rather than the substances themselves.

Since dietary products are legally classified as nutritional supplements, they don't have to meet the same standards of safety and testing as do prescription drugs.

That means that products which carry potentially harmful effects—choline, for instance, can cause diarrhea, while large doses of phenylalanine can cause problems for those with high blood pressure—are often sold without specific warning labels.

Occasionally, even relatively safe nutrients can pose big problems, as was the case in 1989, when the amino acid L-tryptophan was linked to an outbreak of *eosinophilia myalgia syndrome* (EMS), a painful muscle and blood disorder.

Although problems were eventually traced back to a single contaminated batch of L-tryptophan (and all products containing it were pulled off the U.S. market), 31 deaths and 1,500 illnesses were linked to the chemical.

## Neuro-Nutrients: Feeding Your Head

| VITAMINS | MINIMUM | OPTIMUM |
|---|---|---|
| Vitamin A | 5,000 IU | 10,000 IU |
| Vitamin D | 400 IU | 400 IU |
| Vitamin E | 30 IU | 100 IU |
| Vitamin C | 60 mg | 1,000 mg |
| Vitamin B-1 (thiamine) | 1.5 mg | 20 mg |
| Vitamin B-2 (riboflavin) | 1.7 mg | 10 mg |
| Vitamin B-3 (niacin) | 20 mg | 250 mg |
| Vitamin B-5 (pantothenic acid) | 10 mg | 20 mg |
| Vitamin B-6 (pyridoxine) | 20 mg | 20 mg |
| Vitamin B-9 (folic acid) | 400 mcg | 400 mcg |
| Vitamin B-12 (cobalamine) | 6 mcg | 100 mcg |
| Vitamin H | N/A | 300 mcg |
| Choline | N/A | 3 grams |

| MINERALS | MINIMUM | OPTIMUM |
|---|---|---|
| Calcium | 1 gram | 1.6 grams |
| Phosphorus | 1 gram | 1.6 grams |
| Iodine | 150 mcg | 150 mcg |
| Iron | 18 mg | 20 mg |
| Magnesium | 400 mg | 400 mg |
| Copper | 2 mg | 3 mg |
| Zinc | 15 mg | 25 mg |
| Spring water | N/A | 45-60 oz |

Chart reprinted from *Brain Power* (Houghton Mifflin)

***Brain boosters.*** *Want to stay smart* ***and*** *stay safe? Consider these daily nutritional guidelines for the care and feeding of your head. (Recommended for adults and children 10 and older.)*