

Activated Charcoal Overview

It was 1831. In front of his distinguished colleagues at the French Academy of Medicine, Professor Touery drank a lethal dose of strychnine and lived to tell the tale. He had combined the deadly poison with activated charcoal.

That's how powerful activated charcoal is as an emergency decontaminant in the gastrointestinal (GI) tract, which includes the stomach and intestines. Activated charcoal is considered to be the most effective single agent available. It is used after a person swallows or absorbs almost any toxic drug or chemical.

[Activated charcoal](#) is estimated to reduce absorption of poisonous substances up to 60%.

It works by adsorbing chemicals, thus reducing their toxicity (poisonous nature), through the entire length of the stomach and small and large intestines (GI tract).

Activated charcoal itself is a fine, black powder that is odorless, tasteless, and nontoxic.

Activated charcoal is often given after the stomach is pumped (gastric lavage). Gastric lavage is only effective immediately after swallowing a toxic substance (within about one-half hour) and does not have effects that reach beyond the stomach as activated charcoal does.

Charcoal is essentially pure carbon, and the terms “activated carbon” and “activated charcoal” are used interchangeably.

While coal comes from plant matter that loses its noncarbon components over a long time because of pressure and heat deep in the earth, charcoal is made quickly, by heating wood in the absence of oxygen. This leads to a charring (without burning the carbon into carbon dioxide), which drives off most everything except carbon. The process is done on a scale of hours, rather than the millions of years for coal.

[Activated charcoal](#) has been made highly porous, with the individual grains riddled with pores as small as a few billionths of a meter - or in modern parlance, a few nanometers, making this a very early example of large-scale nanotechnology, before people got excited about the word. All these pores mean a mere gram of activated charcoal (about the size of a large pill) can have up to 1,500 square meters of surface area.