

Activated Charcoal – A Magic Fad or A Tragic Dud?

Dr. Sitaram Dixit, Chairman – Consumer Guidance Society of India (CGSI)

The latest fashion in marketing is by adding activated charcoal to consumer products. We find charcoal all over the place from pharmaceuticals drugs (health capsules) and food supplements (including pizza and ice-creams) to toothpaste to whiten the teeth, remove bad breath and skin creams to clear acne or brighten skin.

Activated Charcoal / Carbon

Activated charcoal is like the ones we use in a traditional tandoor to cook food, except that this is extremely porous. We will find activated charcoal available world-wide in different names like carbon, activated carbon, animal charcoal, vegetable carbon, carbon active, animal carbon, medicinal carbon or medicinal charcoal, active vegetable charcoal, lamp black, gas black, etc. We get common charcoal from coal, wood, coconut shell, peat or petroleum.

Ordinary commercial charcoal has limited ability to adsorb substances due to the existence of tarry materials, blocking the pure carbon skeleton. On removing these blockages, the surface area increases literally by millions of times over, providing equally many sites for adsorption of molecules of other substances. Thus, elemental carbon becomes activated carbon i.e., its amorphous form.

Heating regular charcoal without the presence of any oxygen makes it develop lots of “pores/internal spaces” expanding its surface area effectively activating it to “trap” chemicals. One gram of activated carbon has a surface area of over several thousand square yards. Obtaining activated carbon from coconut shell is comparatively superior to ones prepared from other sources mainly because of its macro-porous structure, that renders it more effective for adsorption and removal of colors and odors.

Activated Carbon: Traditional & Modern Uses

Most of us are aware of the industrial use of activated carbon in chemical industry (decolorization, deodorization, purification, filtration, remove chemicals, treating organic pollutants, etc.), food industry, petrochemicals, brewing, gold recovery, solvent recovery, composite fibers, cigarette, waste disposals, respirators and air conditioning systems, deodorizers, etc.

Using activated charcoal to treat poisonings, decrease flatulence (intestinal gas), reduce cholesterol levels, avert hangover and cholestasis (bile flow problems) in women during pregnancy is a common knowledge in pharmaceutical treatment.

In clinical medicine, practitioner’s feed charcoal orally to patients who consume poison or lethal drug overdose, where in activated charcoal performs the important role of sucking and binding the ingested toxins and prevent its absorption into the bloodstream prior to its clinically pumping out of the stomach, acting as an effective antioxidant in reducing food poisoning effects for medical



professionals. Medical doctors sometimes use activated charcoal to disinfect wounds and treat specific poison bites. Short-term consumption of activated charcoal under medical supervision is safe for adults even though side effects like black constipated stools, blockage or slackening of the intestinal tract, dehydration and regurgitation into the lungs also exist.

Is “activated charcoal” beneficial in modern day products and does science support such claims? Let us discuss!

Charcoal in Dentifrices (Toothpastes)

Dentifrices are tooth-cleaning preparations containing a fine powder abrasive, a little surfactant, some flavoring and sweetening agent with an antimicrobial active and a fluoride salt. Specialized toothpastes sometimes contain protein-coagulating chemicals that affect tooth tubules desensitizing them to acids and temperature change.



The incident light reflecting from tooth dentin, primarily determines color. Tooth enamel thickness, absorption/scattering of light falling on it are also responsible. Likewise, tooth stain could be either inherent, external or both. Dentin is inherently yellow and using too much of activated charcoal containing toothpaste could make teeth look yellower or stained than earlier.

The American Dental Association informs that activated charcoal is excessively abrasive and capable to erode tooth enamel. Enamel is the outer layer of our teeth and once gone it is forever gone, making dentin the underneath layer visible. Activated charcoal binds with most toxins present in the tooth surface and in the oral cavity. On rinsing the mouth with clean water all of it comes out together with the rinsed activated charcoal giving a feeling of spotless clean and smooth teeth.

Some advertisement claims say, that brushing with the activated charcoal toothpaste makes teeth up to three shades lighter, change the mouth pH making it inhabitable for infection causing bacterial organisms to thrive and grow, making mouth safe and clean. However, not much published scientific studies exist on charcoal





use for whitening, although, one experimenter said in a dentistry conference, that “fine charcoal powder” could embed in small holes or cracks present in the teeth and darken it.

Smoking damages teeth, building up plaque and bacteria, leading to other oral health issues apart from teeth discoloration. Activated charcoal containing dentifrices that claim to be a cavity-blocker germ killer, primarily targets teeth whitening to help smokers get a whiter healthier smile effectively camouflaging tooth discoloration, counteracting aging and other oral health issues.

Many people believe that charcoal containing toothpaste with its teeth whitening effects is a cost-effective product, however most



dentists advise that one should use activated charcoal having toothpaste with caution and brush teeth one time in a week only and not for longer extended times. Activated charcoal is an abrasive agent and indiscriminate everyday use could erode tooth enamel, lead to gum tissue recession and bleeding causing teeth to become overly sensitive.

Some people believe that using activated charcoal toothpaste remineralize teeth whereas for some it demineralizes it reducing calcium levels. Nevertheless, both these views are false as activated charcoal binds typically to organic compounds and not minerals.

Washing away charcoal is easy, as it does not stick on to any kind of surface however; it only works on easy to bind tea or coffee surface stains and not on yellow teeth because of using antibiotics, drugs or other physiological reasons.

Charcoal in Cosmetic Creams, Foods & Health Capsules

Similarly, activated-charcoal face washes and creams promoted by cosmetic product manufacturers often advertise and claim to clearing up skin and acne by eliminating toxins from skin pores, remove bacteria, dirt and other micro-particles to achieve flawless complexion without any concrete published scientific evidence, to prove that it works.

Honestly, human body does not metabolize charcoal and clinical consumption of activated charcoal only removes toxins (not effective against cyanide, alcohol, caustic alkalis and mineral acid poisons, boric acids, does not absorb oil or sebum) that are present in a person’s stomach. It does not purify human blood that body organs’ viz., kidneys and liver efficiently carry out by filtering out impurities.

It will not be wrong to say that there is no true health benefit in popping a typical 250-milligram charcoal supplement pills to reduce gas or bloating or detoxify anything by eating a pinch of activated charcoal powder in an ice-cream smoothie.

Factually, most advertisement claims about activated charcoal are either an utter unmitigated gimmickry or blatant lies. These products may look cool, probably without having enough stuffs to help or hurt and buying them is only waste of our money.

We all like to use fresh mint or anise after meals believing it to help our digestion, soothe the stomach and freshen our breath. Is there a clinical study proof that this works? Probably no, however we enjoy the feeling even though there is a general lack of scientific proof supporting its popular use. Activated charcoal use, too in cosmetic applications is only a magic health fad that one can avoid.

The best and easy way to avoid gas and bloating will be to stay away from sugar-free products, avoiding artificial sweeteners (sorbitol and mannitol), altogether skip carbonated colas, stick to eating wholesome plant-based vegetarian food and swish our mouth with clean water after drinking beverages (tea/coffee) that stains teeth.

लभेत सिकतासु तैलमपि यत्नतः पीडयन्
पिबेच्च मृगतृष्णिकासु सलिलं पिपासदितः ॥
कदाचिदपि पर्यटन् शशविषाणमासादयेत्
न तु प्रतिनिविष्टमूर्खजनचित्तमाराधयेत् ॥
Squeezing with efforts one can get oil
from sand. A thirsty person may drink
water from the mirage. Sometimes while
wandering one may find the horns of
hare. But it is impossible to please the
minds of determined fools.