

Turmeric Extract, not as Safe and Natural as it Seems

Nowadays, supplements and herb extracts seem to be an important part of what is considered a healthy lifestyle. In fact, the American market is flooded with numerous products that claim to have extensive therapeutic effects having a “natural” basis what, supposedly, makes them unharmed. Unfortunately, even though in many occasions these claims are not supported by scientific evidence, the production of such supplements is currently unsupervised, and manufacturers are obtaining millionaire gains without being required to provide any proof of product’s effectiveness or safety.

An example of an herbal extract widely utilized due to its claimed therapeutic action is Turmeric. *Curcuma Longa* or Turmeric is an ancient herb, part of the Zingiberaceae family, that has been used as food additive, preservative and coloring agent, but also has been used in traditional medicine as home remedy to treat various medical conditions including biliary disorders, rheumatism and sinusitis (Chattopadhyay, 2004). Different studies claim that Curcumin (diferuloylmethane), the yellow bioactive component of turmeric has a wide spectrum of biological actions such as anti-inflammatory, antioxidant, anticoagulant, antibacterial, antifungal properties, among others. It is then, not surprising that today curcumin is sold as dietary supplement in many countries (Chattopadhyay, 2004).



Studies have suggested immune modulatory effect of curcumin involving activation of host macrophages and natural killer cells as well as modulation of lymphocytes mediated function what makes it desirable for use as remedy on inflammatory diseases such as oral lichen planus (Singh, 2013). Curcumin has also been believed to be a chemo preventive agent that inhibits the development of oral cancer (2013).

Certainly, the fact that curcumin is a common dietary constituent does not prove its safety. Even though numerous reports show beneficial effects of curcumin, at doses

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According to some reports, curcumin has as antioxidant, anti-inflammatory and lipophilic action that improves the function of patients with Alzheimer's disease. A study conducted at Nanjing Medical University, showed that an injection of curcumin (2 mg/kg, i.v) after cerebral ischemia in rats, diminished the infarct volume, improved neurological deficit and decreased mortality (Mishra, 2008). As a natural antioxidant, curcumin has also been found to be an inducer of hemoxygenase, a protein that protects against different forms of oxidative stress (Mishra, 2008).

An important characteristic of Alzheimer's disease is the presence of beta-amyloid plaques in the brain, which are an accumulation of small fibers called beta amyloid fibrils. Because of the lipophilic nature of curcumin, it crosses the blood brain barrier and binds to plaques, inhibits their generation, destabilize pre-formed plaques and increase phagocytosis of beta-amyloid, clearing them from the brains of patients with Alzheimer's disease (Mishra, 2008).

Despite the fact that different studies have shown positive effects of turmeric, its use as a home remedy may not be as safe as it is marketed. In fact, curcumin is said to interact with certain drugs such as blood thinning agents, NSAIDs and reserpin. Co-supplementation with 20 mg of piperine (extract from black pepper) significantly increase the low bioavailability of curcumin by 2000% what could lead to toxicity (Mishra, 2008). Curcumin also shows anticoagulant activity by inhibiting collagen and adrenaline -induced platelet aggregation what could make it not recommended and even unsafe prior to certain treatments possibly including dental hygiene procedures.

Moreover, studies have found that the evidence that supports the therapeutic effects of curcumin is mainly based on in vitro studies, in which curcumin was tested at concentrations in the macromolecular range (Burgos-Moron, 2010). However, the plasma concentrations of curcumin in people taking relatively high oral doses of this

compound are very low. When taken orally, curcumin undergoes extensive metabolism, reason why high concentrations of curcumin cannot be achieved and maintained in plasma and tissues after oral ingestion. This is a major obstacle for the clinical development of this agent and suggest a limited therapeutic potential of oral curcumin (Burgos-Moron, 2010).

Regarding cancer, in vitro studies have shown that cancer cells do not die unless they are exposed to curcumin concentrations of 5-50 μM for several hours (Burgos-Moron, 2010). Because of its poor bioavailability, these concentrations are difficult to achieve or to be maintained for several hours when curcumin is taken orally suggesting a limited chemotherapeutic potential for oral curcumin. In fact, in different clinical trials in which patients with different types of cancer were treated with curcumin orally, no partial responses to treatment or decreases in tumor markers were observed (Burgos-Moron, 2010). Other studies with mice taking curcumin have found increased incidence of carcinomas of the small intestine and lung, as well increased cellular levels of Reactive Oxygen species (ROS) which may play an important role in carcinogenesis (Burgos-Moron, 2010).

Evidence have also showed that Curcumin might have the potential to affect systemic iron metabolism and induce iron deficiency anemia particularly in people with suboptimal iron status. Curcumin has also been found to inhibit the activity of the drugs metabolizing enzymes such as cytochrome P450 (Burgos-Moron, 2010). The inhibition of these enzymes in people taking curcumin may lead to an undesired increase in the plasma concentrations of some drugs and cause toxicity (2010).

The mentioned probable adverse effects demonstrate that herb extracts and supplements should not be sold and consumed without caution, and that the fact that something is marketed as “natural” does not mean that it is safe for all individuals and have no potential side effects.

After watching the PBS Frontline documentary “Supplements and Safety” it becomes clear that the supplements and vitamins’ market is a billionaire industry that is even more profitable due to the inexistence of a strong system in place that regulates manufacture, safety and effectiveness of these products before they reach the market. Without the need for expensive but necessary clinical trials, scientific research as well as specialized facilities that comply with appropriate standards for the manufacture of these supplements, it becomes extremely easy and inexpensive for any company or individual to place these products in the market and obtain great revenues. Unfortunately, these large profits are made at the expense of the consumers that trust not only the companies that claim extraordinary therapeutic effects of their products, but even more importantly, that trust and believe a Federal system would never allow the promotion, manufacture and marketing of products

that are not regulated, do not do what they claim to do or that might, in fact, be harmful.

During a visit to a drugstore is it was interesting to observe how many different brands sell apparently the same product, but none of the possible adverse effects of the consumption of these herbs are found on any of the labels. Claims such as “Help maintain heart and cardiovascular system health” lead consumers to believe that there was actual scientific research and proof of effectiveness of the product before it is offered to the costumers. Also, only one of the multiple brands that supposedly sell the same extract stated on their label that those claims have not been evaluated by the FDA, while the others indirectly lead to believe that they are approved and there is evidence of their benefits which, lamentably most of the times is not the case.



After analyzing this material, it is clear that “natural” supplements may not be as safe as they are claimed to be. The question that rises as consumers is: who is in charge of making sure that these products are not only effective but also not harmful? Unfortunately, since supplements such as turmeric, are not required by the Food and Drug Administration (FDA) to prove their safety and effectiveness, it becomes the consumer’s responsibility to investigate and decide, based on their limited sources, if the possibility of achieving the claimed beneficial effects outweigh the possible unwanted side effects of these “freely sold” products. What is even more concerning is the fact that the possible, side effects of the actual herb extract are not the only danger that consumers face when buying these products. The fact that there is no regulation of the manufacturing process or the ingredients in these formulas makes

impossible for the customer to know what is buying and if it is even close to what the product claims to be.

References

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