



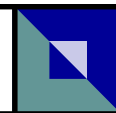
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Xanthonenes have been the subject of research for several decades, but have only recently been examined closely to determine their structure and how they may work to provide health benefits. To date, over 200 xanthonenes have been identified. They are found in a select number of rain forest plants, but are found in the highest levels in the pericarp or rind of the Mangosteen fruit (*Garcinia Mangostana*) and the Noni fruit (*Morinda Citrifolia*). Xanthonenes are not found in the edible aril (fruit) portion of the mangosteen. The xanthonenes must be extracted from the rind to be utilized. The type of extraction process used has a direct impact on which xanthonenes are extracted and the effects they exert.

There are a number of in vitro and animal studies examining the potential benefits of the various xanthonenes, but no human clinical trials. The effective dosage of the various xanthonenes to exert benefits in humans is not currently known. The only published clinical trial in humans using mangosteen extracts is one using a mouthwash to demonstrate the periodontal benefits of the extract. Understanding how xanthonenes may work in the body is an active and ongoing area of research with tremendous potential. The animal and in vitro studies indicate potential benefits of xanthonenes for a number of health conditions including inflammation, digestive health and antioxidant properties.

While there is research supporting potential health benefits of xanthonenes, there is very little research on the mangosteen fruit itself. When analyzed specifically for its edible aril (fruit), mangosteen fails to meet the criteria of being a “superfruit” because its overall nutrient profile is absent of important content to classify it as a “superfruit” and it contains no pigmentation (correspondingly, no antioxidant phytochemicals in significant concentration) and there is no evidence of the aril constituents having any health properties. The fruit portion is what is typically used in juices and has a very appealing taste, fragrance and visual appeal. Only when the puree or juice from the arils is infused with the exocarp (rind) phenolic extracts, does the juice become a superfruit and begin to have some benefits. The phenolic extracts of the rind including the xanthonenes have a purple color and very astringent taste. To overcome this unpleasant taste, many companies combine the mangosteen with other more pleasant-tasting fruit juices or add a significant amount of sugar to the product.

You need to read the label to determine whether a specific mangosteen product contains the rind extracts, added sugars or other fruit juices. If it has added sugar,



then I do not recommend drinking it. The added sugar can negate the beneficial effects of the xanthones and other antioxidant phytonutrients. As long as the product is not too high in sugar, is a blend of fresh juices and has been shown to contain the active components claimed on the label and in marketing materials, there is no harm in including it as a healthy beverage choice as part of a healthy balanced diet.

Because it is not yet known which xanthones produce which health benefits or how much of these compounds is needed to produce the effects, using the full juice extract including the phenolic extracts of the rind is the best way to ensure that a product has some benefits. Phenolic mangosteen extracts in powdered form have recently become available that can be included in an encapsulated product. However, there are still no good standards available to ensure that the active xanthone components are available and bioavailable in this form. There is also not yet enough information or available research to determine the appropriate dose needed to create an encapsulated xanthone product with demonstrated efficacy. Research in this area is ongoing and should produce information needed to create products in the future. Until that time, it is best to consume a quality juice version of mangosteen that includes extracts of the rind to obtain the purported benefits of mangosteen.

Why doesn't InfiAid® contain mangosteen extract or xanthones?

At the time that InfiAid® was formulated, no sources of concentrated xanthones were available, so it was not an ingredient that was considered for the formulation. In 2006, Infinity2 re-evaluated the formulations for the entire product line and updated the formulations for the entire nutrition product line and many of the Physician's Formula line of products. InfiAid® was one of the formulations that our scientific team felt did not need to be updated. There was not sufficient scientific evidence to include xanthones (mangosteen extracts) in Infinity2's encapsulated or powdered products.

Infinity2 has strict standards on what ingredients are used in our products. The mangosteen extracts do not yet have adequate scientific evidence to be included in the products because there are currently no human clinical trials to demonstrate that mangosteen extracts are effective in humans. However, the animal and in vitro studies show that there is tremendous potential for the future. As more research becomes available we will re-evaluate the scientific and clinical data on ingredients such as xanthones from mangosteen to determine if it is appropriate to include in products such as InfiAid®.

**How does InfiAid® compare to xanthone containing juices?**

In comparing InfiAid® to juice products such as mangosteen, it is important to note that InfiAid® is much more than an antioxidant. InfiAid® is formulated to be a balanced source of natural anti-inflammatory ingredients. It includes ingredients such as boswellia extract and bromelain that have a tremendous amount of research and clinical evidence to support the claims being made by the product. The InfiAid® scientific substantiation summary document includes some of the scientific substantiation of the InfiAid® formulation. InfiAid® also contains proteolytic enzymes and a better balance of antioxidants and anti-inflammatory compounds than what would be found in a juice product such as mangosteen or Noni. Juice products such as mangosteen and Noni do not contain proteolytic enzymes.

Other good InfiAid® Information

- InfiAid® product fact sheet
- InfiAid® Technical Bulletin
- InfiAid® scientific substantiation summary
- Life Force Super Antioxidant® fact sheet

Many companies reference the ORAC score of their juice products. The Life Force Super Antioxidant® fact sheet includes information about ORAC scores.