

The Effect of Mango on Bone Parameters

The Big Picture:

Diets high in saturated fat can make it difficult for the body to absorb calcium, which adversely affects bone growth. Strong bones provide a solid foundation for good health. Conversely, low bone mass can lead to osteoporosis, which translates to a reduction in bone mass and increased susceptibility to fractures. The number of people with osteoporosis and low bone mass is expected to increase as the population ages, in fact, in the next 15 years bone fracture costs are projected to top \$25 billion, researchers say.

Compounding this problem is the fact that some treatments for diseases attributed to consumption of high-fat diets can actually hamper the body's ability to build strong bones. In particular, rosiglitazone (also known as Avandia), a drug used to lower glucose in patients with type 2 diabetes, is associated with increased risk of osteoporosis.

Because mangos have been effective in reducing body fat accumulation in mice fed a high-fat diet, the National Mango Board commissioned a research study to examine the effect of mangos on bone parameters in mice fed a high-fat diet.


Dr. Edralin Lucas of Oklahoma State University, Stillwater, Okla., investigated the effect of Tommy Atkins variety mangos on bones using an animal model. The mangos were freeze-dried, ground to a fine powder, and mixed with high-fat powdered diet for mice. Dr. Lucas found that further exploration of the role of mangos in maintaining skeletal health is warranted.

Overall Findings:

- **In mice, consumption of mangos helped to counteract the negative effects on bone parameters caused by a high-fat diet.** Mangos have been shown to improve glucose levels in mice without the side effects of bone loss that are associated with taking rosiglitazone.
- **After two months of being fed a high-fat diet, mice given 1% mango had better bone quality than those receiving rosiglitazone.** Mice with 1% mango in their diet had the highest tibial and spinal bone mineral density. Those receiving rosiglitazone had the lowest bone mineral density.
 - Mice with 1% mango added to their diets showed greater bone quality than those receiving rosiglitazone when researchers looked at the bones three-dimensionally. Also, the force needed to break the bone was greater in mice fed 1% mango than in the other groups.
 - Another group of mice received 10% mango powder with their food, but results were not incrementally better

Looking Ahead:

These findings suggest that small doses of mango seem to help strengthen bones in mice. More research is clearly necessary with regard to how mangos affect bone parameters. Suitable animal models for investigating bone loss need to be explored and the specific components of mangos that create these results need to be studied. Studies on other varieties of mangos would also be helpful, as each distinct variety offers different vitamin,



mineral and phenolic content. If future research confirms the positive effects of mangos on bone parameters, human studies should be conducted to determine whether mangos can help strengthen bones in the human body.

Finding ways to use mangos to promote good health can help the mango industry. Identifying the health benefits of the tropical fruit will help drive sales of mangos and increase demand and consumption.