

## **UVB Exposure, Sensitivity, and D3 Supplements - by: Bob MacCargar**

Dr. Holicks studies proved long ago that skin exposure on humans could be as little as just your hands and face. Dr. Gehrman's latest paper (in the files section) proved that MV SPOT lamps could produce blood hydroxyl levels higher than full body exposure to high UVB producing fluorescent lamps in spiny tailed iguanas (these were chosen because they "assumed" they would be good indicator of a broad range of diurnal lizards).

Dr. Ferguson's "preference" paper (files section) mentions "enhanced ability" to perform this bio synthesis conversion by more sensitive skin to UVB.

*"UV-B limitation suggests another issue. How do lizards adapted to low UV-B light environments obtain vitamin D3? Must they seek vitamin D-rich foods, or are they still able to generate vitamin D3 endogenously with low levels of UV-B? We have begun to address this issue (Carman et al. 2000). Nocturnal/crepuscular house geckos Hemidactylus turcicus are active in low UV-B light environments, yet they have skins highly sensitive regarding UV-B-induced vitamin D3 synthesis. Conversely, diurnal Texas spiny lizards are active in higher UV-B light environments but have skins less sensitive regarding UV-B-induced vitamin D3 synthesis. The natural dietary levels of vitamin D3 seem to be lower for the geckos than they are for Texas spiny lizards. We currently do not know whether these species actively show phototactic responsiveness to UV-B, which would suggest that they possess vitamin D-regulating behavior. However, low opportunity may be compensated by enhanced ability. An interesting comparison would be relative opportunity and compensatory ability for UV-B-induced vitamin D3 production for species or populations within a clade, such as sun-dwelling and shade-dwelling Anolis (Hertz 1992a, 1992b)."*

I find this fascinating! I have friends that have kept Fat Tailed Geckos for over 15 years (they will live over 25 years) swearing they never exposed them to UVB. But is it possible that the geckos have such enhanced ability that they can store the pre D3 converted to even infinitesimal amounts of UVB? The above information answered years of my asking gecko keepers how in the world these creatures absorb calcium when their diet is identical to most captive chameleons (even if not that way in their natural settings)?

A couple of years ago my brother "rescued" two FT's from his neighbor. Because of my UVB research he went and bought a "reptile lamp" from the pet shop. It was an ESU 18" tube. When I had a chance to test the lamp, it only produced about 3uW at 12". "Useless" I said then to him then. I now understand how this lamp may well have helped these two creatures (which were on the brink of death when he retrieved them) become such healthy active little deviled eyed buggers. My son Jeremy now keeps these two geckos.

This topic originally came up because my friend Nicole asked a question.

*"Something I have recently spoken about on RTB, and have, in the past argued about-- is D3 supplementation verses quality lighting or UVB.*

*It's always the new herper or young herper that says "hey as long as I use D3 I don't need expensive lighting". I argue how toxic it can be--how the sun is the best souce--a GOOD bulb second --d3 has not been mastered by anyone I'm aware of even though some herpers have studied this extensively.*

*What is everyone's thoughts on this?"*

Are you still here Nicole, or on the islands saving cyclure?

Over the years many have tested this theory and have always had the same horrific results. Deformed, sick, and dead reptiles. I have "heard" of recent studies in England with the T-Rex product "Solar Drops" that are supposed to have raised iguanas on this D3 supplement only with no exposure to UVB. While I have used this product with great success on iguanas with severe MBD going into convolutions and tremors (combined with B-complex injections and 200+ microwatts of UVB) and pulled them back from the brink, I would never believe it would replace UVB.

The fact is that dietary D3 should only be used in trace amounts and never be used to replace UVB. Dietary D3 can be toxic and has a problem of building up in the system. UVB induced D3 has a self limiting process, breaking down the excess D3 into inert ingredients filtered out by the kidneys. The Creators design is nothing less then mind boggling.

I have read many failed studies over the years, but the ones I can quote for the "skeptics" target this published study. In it thousands of iguanas had to suffer (Jacobson's "Biology, Husbandry, and Medicine of the Green Iguana" page 56) to produce two these two document writings.

Bernard, "The response of vitamin D deficient green iguanas to artificial light". Pro. Amer. Assoc. Zoo Vet., 1991, pp 147-150

Allen,: "Remarkable differences in the response to dietary vitamin D among species of reptiles and primates: Is ultraviolet B light essential?", in Holick and Jung (eds): Biologic Effects of Light 995. Walter de Gruyter, New York, 1996,pp 13-38.

The simple fact is that the blood hydroxyl levels in humans, animals and reptiles all benefit from at least some UVR (unless there is a severe medical problem that negates this statement, Holick, 1992 and continuing studies). The hope by some deficient reptile keepers to find the "easy way out" will only prove futile.

Bob MacCargar

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