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## URIDINE PHARMACOKINETICS OF MITOCNOL, A SUGAR CANE EXTRACT

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**BACKGROUND:** *In vitro* data and limited *in vivo* data indicate that the supplementation of uridine may be beneficial in preventing and treating the mitochondrial toxicity of pyrimidine nucleoside analogue reverse transcriptase inhibitors (NRTIs) by abrogating mtDNA depletion. NucleomaxX is a food supplement of potential use in treatment of mitochondrial toxicity as it contains Mitocnol, a sugar cane extract with a high percentage of nucleosides. However, the exact effects of Mitocnol consumption on the serum levels of uridine in humans are not known.

**METHODS:** Healthy, fasting, adult human probands (four male and four female) consumed 36 g of NucleomaxX by drinking 200 ml of orange juice in which the extract was dissolved. Baseline serum levels of uridine were measured by HPLC before drinking NucleomaxX and during the following 24 h.

**RESULTS:** Mean ( $\pm$ SD) uridine serum levels at baseline were  $5.6 \pm 1.1$   $\mu$ M (males 5.8  $\mu$ M, females 5.4  $\mu$ M). After NucleomaxX consumption, uridine serum levels rose sharply and peaked after 1.3 h. The mean maximal uridine serum concentration ( $C_{\max}$ ) was 152.0  $\mu$ M ( $\pm 29.2$   $\mu$ M). The  $C_{\max}$  range was 116.0–212.0  $\mu$ M. The mean  $C_{\max}$  in females was slightly but non-significantly higher ( $165.4 \pm 35.8$   $\mu$ M) compared with males ( $138.6 \pm 15.2$   $\mu$ M), possibly due to the lower body weight and body surface area of the former (mean body weight and body surface of females: 62.3 kg and 1.71 m<sup>2</sup>) compared with the latter (males: 77.5 kg and 1.96 m<sup>2</sup>, respectively). Uridine was eliminated from the serum with an initial half-life of 2 h and a terminal half-life of 11.1 h. After 8 and 24 h, mean uridine serum levels were 19.3  $\mu$ M ( $\pm 4.7$   $\mu$ M) and 7.5  $\mu$ M ( $\pm 1.6$   $\mu$ M), respectively. The

mean AUC calculated with the linear trapezoidal rule between the time points in the time data range was 736  $\mu\text{Mh}$  ( $\pm 95$   $\mu\text{Mh}$ ) and was identical between sexes. Adverse events were not observed.

**CONCLUSION:** Mitocnol effectively increases uridine serum levels in humans.

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