

International Conference on

METABOLOMICS AND DIABETOLOGY

May 23-24, 2018 | New York, USA

Hemoglobin oxidation studies in diabetic's blood and normal blood: The effects of alkyl nitrites

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The effect of alkyl nitrites on human type 2 diabetic's blood was undertaken using non-diabetics blood as the control group. The alkyl nitrites studied were ethyl nitrite, butyl nitrite, pentyl nitrite and hexyl nitrite. The ethyl nitrite mean oxidation time \pm SEM of diabetics blood was 1.5 ± 0.05 min (sample size is $n=20$) and the mean oxidation time \pm SEM of the non-diabetic's blood was 4.5 ± 0.05 min ($n=20$). The butyl nitrite mean oxidation time \pm SEM of diabetic's blood was 1.5 ± 0.04 min ($n=20$) and the mean oxidation time \pm SEM of the non-diabetic's blood was 4.8 ± 0.14 min ($n=20$). The pentyl nitrite mean oxidation time \pm SEM of the diabetic's blood was 1.5 ± 0.05 min ($n=20$) whereas the mean oxidation time \pm SEM of the non-diabetic's blood was 3.1 ± 0.12 min ($n=20$). For hexyl nitrite the mean oxidation time \pm SEM of the diabetic's blood was 1.5 ± 0.04 min ($n=20$) whereas the mean oxidation time \pm SEM of the non-diabetic's blood was 3.7 ± 0.07 min ($n=20$). In all instances these studies demonstrate that diabetics blood has an enhanced susceptibility of oxidation into methemoglobin by alkyl nitrites compared to their respective control groups ($P < 0.05$). This similar finding could be attributed to the fact that these alkyl nitrites are all organic nitrites wherein they contain saturated hydrocarbon chains ranging from two to six carbons. Thus, the difference of up to four methylene molecules had no statistically significant effect on the rate of oxidation on either human diabetics blood or human non-diabetics blood ($P > 0.05$).

Biography

John Philip Tarburton has completed his PhD from the University of Nebraska and also completed his Postdoctoral studies at the University of Nebraska. He is an Assistant Professor in the Department of Mathematics and Natural Sciences at National University (which is the second-largest private nonprofit institution of higher learning in California and the twelfth largest in the United States). He has published more than 30 papers and abstracts in reputed journals and a book chapter about his research findings.

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