

## Cis-vaccenic acid induces differentiation and up-regulates gamma globin synthesis in K562, JK1 and transgenic mice erythroid progenitor stem cells

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**G**amma globin induction remains a promising pharmacological therapeutic treatment mode for sickle cell anemia and beta thalassemia, however, hydroxyurea remains the only FDA approved drug which works via this mechanism. In this regard, we assayed the  $\gamma$ -globin inducing capacity of Cis-vaccenic acid (CVA). CVA induced differentiation of K562, JK1 and transgenic mice primary bone marrow hematopoietic progenitor stem cells. CVA also significantly up-regulated  $\gamma$ -globin gene expression in JK-1 and transgenic mice bone marrow erythroid progenitor stem cells (TMbmEPSCs) but not K562 cells without altering cell viability. Increased  $\gamma$ -globin expression was accompanied by KLF1 suppression in CVA induced JK-1 cells. Erythropoietin induced differentiation of JK-1 cells 24 h before CVA induction did not significantly alter CVA induced differentiation and  $\gamma$ -globin expression in JK-1 cells. Inhibition of JK-1 and transgenic mice bone marrow erythroid progenitor stem cells fatty acid elongase5 (Elovl5) and  $\Delta$ 9 desaturase suppressed the  $\gamma$ -globin inductive effects of CVA. CVA treatment failed

to rescue  $\gamma$ -globin expression in Elovl5 and  $\Delta$ 9-desaturase inhibited cells 48 h post inhibition in JK-1 cells. The data suggests that CVA directly modulates differentiation of JK-1 and TMbmEPSCs and indirectly modulates  $\gamma$ -globin gene expression in these cells. Our findings provide important clues for further evaluations of CVA as a potential fetal hemoglobin therapeutic inducer.

### Speaker Biography

Idowu A Aimola is a Senior Academic Staff at the Department of Biochemistry, Ahmadu Bello University, Zaria. He is also a member of the Africa Centre of Excellence on Neglected Tropical Diseases and Forensic Biotechnology at the University. He obtained his PhD in Biochemistry from Ahmadu Bello University, Zaria and was a Fulbright Scholar at the Department of Cell and Developmental Biology, Mount Sinai School of Medicine New York. He is a member of the Sickle Cell Support Society of Nigeria. His main research interest is in red blood cell developmental biology and hematological disorders. His research work involves studying molecular mechanisms, genetics, epigenetics and small molecules induction of fetal hemoglobin expression. He has scholarly publications in renowned peer reviewed international and national journals. He is an Editorial Member of some international journals.

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