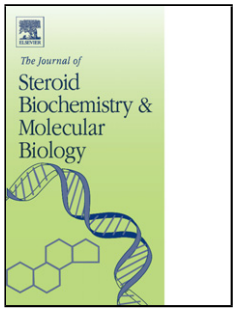

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PII: S0960-0760(16)30059-0
DOI: http://dx.doi.org/doi:10.1016/j.jsbmb.2016.03.013
Reference: SBMB 4667

To appear in: *Journal of Steroid Biochemistry & Molecular Biology*

Received date: 19-9-2015
Revised date: 4-3-2016
Accepted date: 6-3-2016

Please cite this article as: Aleksandra Marchwicka, Malgorzata Cebrat, Agnieszka Laszkiewicz, Lukasz Śnieżewski, Geoffrey Brown, Ewa Marcinkowska, Regulation of vitamin D receptor expression by retinoic acid receptor alpha in acute myeloid leukemia cells., Journal of Steroid Biochemistry and Molecular Biology http://dx.doi.org/10.1016/j.jsbmb.2016.03.013

Regulation of vitamin D receptor expression by retinoic acid receptor alpha in acute myeloid leukemia cells.

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Highlights

- We show that RARα is responsible for regulating *VDR* transcription in AML cells.
- We show that the *VDR* transcriptional 1a variant is regulated by RARα in AML cells.
- *VDR* gene expression is low in the absence of RARα agonist in KG1 cells.
- We identify a *VDR* transcript variant originating from a new exon 1g.
- The *cis*-regulatory element, used by RARα, is located in the promoter region of exon 1a.

Abstract

Acute myeloid leukemia (AML) is the predominant acute leukemia among adults, characterized by an accumulation of malignant immature myeloid precursors. A very promising way to treat AML is differentiation therapy using either all-*trans*-retinoic acid (ATRA) or 1,25-dihydroxyvitamin D_3 (1,25D), or the use of both these differentiation-inducing agents. However, the effect of combination treatment varies in different AML cell lines, and this is due to ATRA either down- or up-regulating transcription of vitamin D receptor (VDR) in the cells examined. The mechanism of transcriptional regulation of *VDR* in response to ATRA has not been fully elucidated. Here, we show that the retinoic acid receptor α (RARα) is responsible for regulating *VDR*