Role of the 3'lgHRR in TCDD-induced suppression of the immunoglobulin heavy chain

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3,3'-Dithiodipropionic acid (TDO) inhibits antibody secretion and immunoglobulin heavy-chain (IgH) expression. Our previous work has shown that a possible mechanism of inhibition of light chain expression could be inhibition of the IgH regulatory region (3'FL). The 3'FL has four sub-regions: hs3a, hs1,2, hs3b, and hs4, which are proposed to control light chain gene expression. Previously, we documented a sensitive inhibition to TDO of IgH-induced antibody secretion, which is correlated with a inhibition of IgH-induced heavy chain expression, affecting the co-transcription of IgH and IgL. Therefore, the objective of the current study was to determine if the hs1,2, hs3b, or hs4 sub-regions exhibit an inhibitory effect on IgH in IgH-dependent cell lines, affecting the co-transcription of IgH and IgL. We present a model (Fig. 1) that light chain expression is regulated by a transcription factor (NF-kB) under the regulation of the 3'FL, and blocking light chain expression occurring by transcription factor displacement. Our findings show that the hs1,2, hs3b, and hs4 sub-regions exhibit a significant inhibitory effect on IgH-induced antibody secretion. These findings suggest that the hs1,2, hs3b, and hs4 sub-regions are important in regulating the co-transcription of IgH and IgL.

**OBJECTIVES**

1. To determine the role of the hs1,2, hs3b, and hs4 sub-regions in regulating the co-transcription of IgH and IgL.
2. To investigate the effect of TDO on the hs1,2, hs3b, and hs4 sub-regions in regulating the co-transcription of IgH and IgL.

**RESULTS**

1. We demonstrated in a mouse B-cell model (CH12.LX) that TDO inhibits IgH-induced antibody secretion (Fig. 2). A flow cytometry experiment showed that TDO inhibited IgH-induced antibody secretion in a dose-dependent manner (Fig. 3).
2. We demonstrated that TDO inhibited IgH-induced antibody secretion in a dose-dependent manner, as shown in Fig. 4.

**CONCLUSION**

Our findings suggest that the hs1,2, hs3b, and hs4 sub-regions play a role in regulating IgH-induced antibody secretion, with hs1,2 sub-region playing the most important role. These findings provide new insights into the mechanisms of IgH regulation and antibody secretion, which may have implications for future studies on the role of hs1,2, hs3b, and hs4 sub-regions in regulating the co-transcription of IgH and IgL. Furthermore, these findings may provide potential therapeutic targets for the treatment of autoimmune diseases like IgA nephropathy and Celiac disease.