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Data Article

Dataset on characterization of recombinant interleukin-23α, IL-12p40 and IL-23 complex protein, which activates JAK-STAT signaling pathway in chicken cell lines using immunocytochemical staining

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ABSTRACT

The data herein is related to the research article entitled "Functional analyses of the interaction of chicken interleukin 23 subunit p19 with IL-12 subunit p40 to form the IL-23 complex" (Truong et al., 2017) [1] where we demonstrated that the chicken interleukin (IL)-23α, IL-12p40, and IL-23 complex regulates Th1, Th17, and Treg cytokine production through heterodimer receptors as well as a homodimer receptor consisting of IL-12Rβ1 and IL-23R, and activates the JAK/STAT signaling pathways. Here, we evaluated the effects of the recombinant chicken IL-23α, IL-12p40, and IL-23 complex protein on cell proliferation and nitric oxide (NO) production in chicken macrophage (HD11) and CU91 T cell lines. In addition, the expression of IL-6, IL-17A, and interferon-γ mRNA were upregulated *in vivo* and *in vitro*. Moreover, treatment with

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the chicken IL-23α, IL-12p40, and IL-23 complex activated phosphorylation of tyrosine and serine residues in JAK2, STAT1, TYK2, and SOCS1 in chicken cell lines.

Specifications Table

Subject area	*Biology*
More specific subject area	*Chicken interleukin-23, interleukin-12, signaling pathway*
Type of data	*Graph, image, figure*
How data was acquired	*To analyze recombinant proteins, western blot analysis using specific a HRP-anti-His (C-Term) antibody* *Nitric oxide content and cell proliferation were measured as described* [2,3] *To analyze signaling protein expression, immunocytochemical analysis using specific bodies were used* [4]
Data format	*Analyzed*
Experimental factors	*Recombinant protein was produced in E. coli and purified using HisPur™ Cobalt Resin; HD11 and OU2 cell lines were treated with recombinant protein as described* [5]
Experimental features	*Analysis of qRT-PCR, western blot, immunocytochemical*
Data source location	*Anseong, Republic of Korea*
Data accessibility	*Data are provided with this article*

Value of the data

- The data is valuable for the expression of pro-inflammatory molecules in chicken cell lines treated with DMSO and LPS and various tissues of chicken following *S. enteritidis* infection.
- The data is a contribution to the effect of chicken IL-23α, IL-12p40, IL-12p40 + IL-23α, and IL-23 complex protein to cell proliferation and production of reactive oxygen species in the form of NO in chicken cell lines.
- The data provided the expression of JAK-STAT signaling molecules by chicken IL-23α, IL-12p40, IL-12p40 + IL-23α, and IL-23 complex protein stimulation in chicken cell lines.

1. Data

The dataset in this article provides additional information to Ref. [1], where we demonstrated that the chicken IL-23α, IL-12p40, and IL-23 complex activated multiple signaling pathways through heterodimer receptors, as well as a homodimer receptor consisting of IL-12Rβ1 and IL-23R, and induced Th1, Th17, and Treg cytokine production. In this dataset, we provided the nucleotide and amino acid sequences of the chicken IL-23α coding region (Fig. 1A). These proteins were observed as single bands at 34 kDa (ChIL-23α), 48 kDa (ChIL-12p40- G10S3 linker), and 68 kDa (ChIL-23 complex) (Fig. 1B) by western blotting using the horseradish peroxidase (HRP)-anti-His (C-Term) antibody

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