Human cDNAs encoding elongation factor 1γ and the ribosomal protein L19

Toshihiro Kumabe, Yoshiaki Sohma and Tokuo Yamamoto
The Tohoku University Gene Research Center, 1-1 Tsutsumidori-Amamiya, Aoba, Sendai 981, Japan

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Cells from human monocytic leukemia cell line THP1 (1) can be induced to differentiate into more mature monocytic/macrophagic phenotype by retinoic acid (RA) (2). THP1-S cell line, one of the variant cell lines derived from THP1, is approximately 10 times more sensitive than the parent cell line (2). In an attempt to characterize the gene expression during the cell differentiation, we undertook cDNA cloning of mRNAs that are down-regulated in THP1-S cells by RA. A cDNA library was constructed from poly(A)$^+$ RNA from THP1-S cells in the Okayama-Berg vector (3). By means of differential hybridization, two cDNAs were obtained and characterized by nucleotide sequencing.

One of the cDNAs encodes a protein (EMBL/GenBank/DDBJ accession no. X63526) highly homologous to the elongation factor 1γ (EF-1γ) from *Xenopus laevis* (4). The degree of sequence identity of the human protein to the *Xenopus* EF-1γ is 75.7%; a gap was counted as one substitution. When conservative replacements are included in the calculation, the similarity of the human protein to the *Xenopus* EF-1γ, is 89.2%. This degree of similarity is highly significant and indicate that the cDNA encodes human EF-1γ. The level of the mRNA in THP1-S cells was decreased to 75% (the average of three independent experiments) of the initial level after a 5 day exposure to RA (Figure 1A).

The other cDNA encodes a protein (EMBL/GenBank/DDBJ accession no. X63527) corresponding to the ribosomal protein L19 from rat (5). The open reading frame of the cDNA predicts a 196 amino acid protein that is completely agreed with that of the rat L19 ribosomal protein. The level of the mRNA in THP1-S cells was decreased to 50% (the average of three independent experiments) of the initial level after a 5 day exposure to RA (Figure 1B).

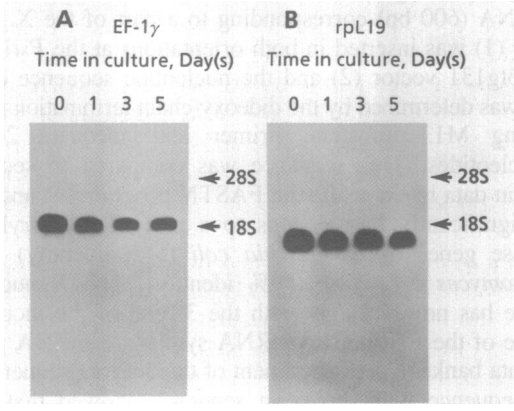

Figure 1. Expression of the mRNAs for the human elongation factor 1-γ (EF-1γ) (A) and the human ribosomal protein L19 (rpL19) (B) in THP1-S cells during the differentiation. THP1-S was maintained in serum-free medium (HyMedium 606, KOHJIN BIO, Saitama, Japan). RA was dissolved in ethanol and added to the culture medium. The final concentration of RA was 300 nM. Total cellular RNAs were prepared from THP1-S cells (day 0) or from THP1-S cells treated with RA for 1, 3, and 5 days. Total cellular RNAs (20 μg per lane) from samples were analysed by Northern blot hybridization using ^{32}P-labeled cDNA probes.

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