

Senescence of cultured keratinocytes and the expression of p21, p53 and p16

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Senescent cells are blocked in the G1 phase of the cell cycle. The proteins p21 and p16 are inhibitors of cyclin-dependent kinase and affect cell cycle progression and senescence. We have studied whether p21, p53 and p16 was associated with cultured keratinocytes senescence. Keratinocytes were isolated from normal human skin obtained from individuals aged from 1 to 70 years, and cultured under serum free condition. The cultures have been continued until the cell growth arrest. The expression of p21, p16 and p53 in the growing cells and the senescent cells was analyzed by Western blot. The keratinocytes obtained from the individuals aged 1 and over 40 years tend to survive longer periods than the cells from the other ages. The p21 expression has not been changed compared to the early passage while the cells were growing, but increased just before the growth arrest. The p16 expression on the 8th passage has been increased compared to the third passage in both growing cells and senescent cells. These data suggest that increased p21 followed by p53 play an important role in the growth arrest of senescent keratinocytes. Increased p16 is a co-factor for the growth arrest.