IDENTIFICATION OF A KEY GENE FOR REVERSION OF CANCER CELLS INTO NORMAL CELLS AND DRUG REPURPOSING

【ABSTRACT】

The present invention relates to a pharmaceutical composition for preventing or treating cancer, comprising spironolactone or a pharmaceutically acceptable salt thereof, or BPK-21 or a pharmaceutically acceptable salt thereof, as an active ingredient, wherein the composition reverts cancer cells into normal-like cells (or normal-functioning cells) by specifically inhibiting or degrading ERCC3 (ERCC Excision Repair 3, TFIIH core complex helicase subunit), also referred to as XPB (Xeroderma Pigmentosum group B), thereby suppressing the proliferation of cancer cells and simultaneously inducing normal differentiation. Moreover, the present invention relates to a method for screening a drug that reverts cancer cells into normal-like cells (or normal-functioning cells) by specifically inhibiting or degrading ERCC3 (ERCC Excision Repair 3, TFIIH core complex helicase subunit), also referred to as XPB (Xeroderma Pigmentosum group B), thereby suppressing the proliferation of cancer cells and simultaneously inducing normal differentiation, the method comprising: (a) treating cancer cells with a candidate substance *in vitro*; (b) measuring the expression level of ERCC3 in the cancer cells treated with the candidate substance; (c) selecting a candidate substance that exhibits a lower expression level of ERCC3 than that of a control group not treated with the candidate substance; and (d) determining, among the candidate substances selected in step (c), a candidate substance that reduces the expression of at least one gene selected from the group consisting of KRAS, HMGA1, and G3BP1 or increases the expression of the BMP2 gene, as a drug that reverts cancer cells into normal-like cells (or normal-functioning cells).

【Fig. 5A】