INTRODUCTION

CANCER STEM CELLS (CSCs)...

- Are a small tumour cell subpopulation that can initiate and drive tumourigenic growth
- Carry out an asymmetric division: they are able to renew themselves and they can also differentiate

Are a small tumour cell subpopulation that can initiate and drive tumourigenic growth

1. CANCER STEM CELLS AND THEIR ORIGIN

2. ALDEHYDE DEHYDRGENASE

- Aldehyde dehydrogenases (ALDH) are enzymes that catalyse the oxidation of aldehydes to their correspondent acids by a NAD(P)H-dependent irreversible reaction
- This enzyme oxidises and detoxifies aldehydes that can be harmful to the organism
- ALDH is considered a marker for CSCs, identifiable by the Aldefluor assay

3. RETINOIC ACID SIGNALLING PATHWAY

- The interest of finding a CSC target is focused on the retinoic acid signalling pathway, in which ALDH plays an essential role
- Retinoic acid (RA) goes into the nucleus attached to a chaperone or RXR. When RA binds to the heterodimer, histone acetylation and activation of transcription is given

- This signalling pathway is stopped when the degradation of RA is given by CYP24 enzyme

4. THERAPIES THAT TARGET CSCs

1. ATRA could be a novel cancer therapy by producing retinoic acid and causing differentiation, although non-CSCs also have to be eliminated to eradicate all the bulk of the tumour by conventional therapies

ALDH is not only a marker for cancer stem cells, and further studies are needed to resolve more questions about cancer

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RELEVANT REFERENCES
