Poster

El papel de la microbiota en el tratamiento contra el cáncer

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ABSTRACT

Motivation: Cisplatin (CP) or cis-diamminedichloridoplatinum(II) (CDDP) is a widely used chemotherapeutic agent for various solid tumors. DNA is the critical target for cisplatin by inhibiting DNA synthesis and inducing celular apoptosis (Crone, 2015). However, its effectiveness in each individual is greatly different. Understanding the causes of this disparity may contribute to the development of personalize treatments. Therefore, patients will get more effective results. One of those causes may be the intestinal microbiota composition. The relationship between the host and the commensal microbiota regulates physiological functions which could have a link with tumor progression (Perez-Chanona, 2016). In this study we expect to find a direct relationship between a particular specie of bacteria given as supply and the effectiveness of cisplatin in the nematode C. elegans. This information will allow to anticipate therapy efficacy based on microbiota composition of every patient. Moreover, microbiota may be modified to achieve the expected results. To find out how this drug affects C. elegans, brood size of each individual was analyzed after being treated with it. Offspring is measured in order to quantify DNA damage during gametic production. A decrease in offspring after cisplatin treatment indicates positive drug function (Crone, 2015).

Methods: For each experiment, wild type (N2) strain of C. elegans eggs were incubated in NGM plates seeded with a mixture of E. coli (OP50) (90%) and the chosen intestinal bacteria (10%). After 72 hours maintained at 16ºC, L4 nematodes (last larval stage previous to fertile adult stage) were exposed to cisplatin (150 µg/ml, dissolved in M9 buffer including 0.01% Tween20) for 2 hours. Afterwards, worms were washed three times in M9 buffer. Ten worms from each treatment were selected to be placed again in the previous mixture of bacteria for 24 hours. The day after, each one was moved to a new and individual NGM plate containing only OP50 as supply. The three following days brood size was scored for every worm.

Results: So far, a decrease in offspring of 26% has been achieved when the worm is seeded with OP50 and exposed to cisplatin (150 µg/ml). This decrease in brood-size allows the detection of reduction and also improvement of the cisplatin effect.

Conclusions: Based on the previous data, the effect of different bacteria species will be evaluated.

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