

### Identification of microbiome increasing the efficacy of Oxaliplatin in lung cancer patients

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Oxaliplatin induces tumor cell apoptosis by arrest of DNA synthesis, inhibition of RNA synthesis, and triggering of immunologic reactions. These mechanisms made Oxaliplatin to be used as a treatment for lung cancer. However, some patients respond well to Oxaliplatin treatment but others do not respond. Intestinal microbiome can influence immune pathway, so that it may affect efficacy of Oxaliplatin. We classified the patients with lung cancer into two groups according to the response of Pemetrexed and Oxaliplatin treatment and collected stool samples. We conducted sequence-based analysis for 200 lung cancer patients' Intestinal microbiome. Total DNA was extracted using the MO-BIO PowerSoil DNA Isolation Kit and PCR amplification was carried out using primers targeting the hypervariable regions V3-V4 (515f-806r) of the 16S ribosomal RNA gene on the Illumina MiSeq platform. Sequence reads processing was analyzed using the QIIME pipeline. As a result, specific strains were associated with therapeutic outcomes such as several Bifidobacterium species. Using syngeneic model, we found that Bifidobacterium species increased the efficacy of Oxaliplatin. Our results suggest that manipulating the microbiome can play a role in modulating cancer therapy.

#### References

Park H, Cho S-Y, Kim H, Na D, Han J Y, Chae J, Park C, Park O-K, Min S, Kang J, Yang H-K, Lee C. Genomic alterations in BCL2L1 and DLC1 contribute to drug sensitivity in gastric cancer. Proceedings of National Academy of Sciences. 2015; Oct 6;112(40):12492-7