

***Vigna unguiculata* extracts as a possible synergic treatment to colorectal cancer.**

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Colorectal cancer (CRC) is one of the most common type of cancer, especially in Western countries, and its incidence rate is increasing every year. Besides standard chemotherapies, new drugs targeting specific molecular alterations have shown great results in the treatment of advanced/metastatic patients. Of these new options, Cetuximab (CMab), a monoclonal antibody able to block EGFR dimerization, has entered clinical practice 10 years ago but it is still characterized by some side effects and efficacy in no more than 30% of patients. Our aim was to evaluate whether the effect of CMab can be potentiated with the addition of natural compounds, at least in colorectal cancer cell lines. Pulses are known from literature to show a wide range of healthy properties, acting as antioxidant, anti-inflammatory and cancer preventive agents. While many different staple varieties, such as lentils, common bean and soybean have been deeply investigated, other species, such as those of African origin, remain still uncharacterized. To address this issue, we tested the effect of *Vigna unguiculata* seed extracts (a pulse of African origin) on three cell lines: one healthy, CCD841, and two tumoral, E705 (responsive to CMab) and CaCo2 (non-responsive to CMab) by evaluating their viability through MTT assay. Afterwards, different purification stages were performed in order to separate the active fraction from the non-active ones. Since the whole extract showed activity on the E705 cell line, it was hypothesised the occurrence in the phytocomplex of a protein or of a protein complex able to mimic the action of the CMab. To address this issue, the bioactivity of *V. unguiculata* extracts combined to increasing amounts of CMab was assessed. The combination experiment showed a synergy between the drug and the extract: we observed that a comparable effect was achieved at lower concentrations of both the drug and the extract. Furthermore, the EC50 of the drug was significantly lowered by the presence of the extract and the viability plateau was decreased of about 20%, giving clues about a wider panel of effectors targeted by *Vigna* extract than by CMab. In the future, we plan to identify precisely the molecules that showed the activity and, after purification and characterization, the use at first in preclinical models and then on the patients can be hypothesized.

