

Human oral squamous cell carcinoma proliferation and migration prevented by two flavonoids

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Oral Cancer (OC) is one of the most frequent cancer in Head and Neck district and Oral Squamous Cell Carcinoma (OSCC) constitutes the large majority of the neoplasia arising in oral cavity. OSCC remains a hampering matters for clinics, since the overall disease free survival has not significantly increased during the last decades and invasion to surrounding tissue and to regional lymph nodes is often reported. Therefore new strategies to prevent and inhibit OSCC growth and invasion are highly desirable and new therapeutic approaches are currently tempted also with the use of natural compounds. Myricetin (MYR) and Naringenin (NAR), two naturally occurring flavonoids, widely diffused in plants, fruits and vegetable, have recently gained consideration thanks to their anti oxidant, anti inflammatory and anti tumoral properties.

In this study their potential anticancer effect has been evaluated on an OSCC cell line, SCC-25 and on spontaneously immortalized non tumoral keratinocytes, HaCaT cells.

MYR and NAR induce a significant cell growth inhibition in SCC-25 cells, in addition NAR selectively affected cancer cells, since it does not impair HaCaT cell growth. Furthermore an additive effect of MYR and NAR has been highlighted.

The cell proliferation inhibition is not related to apoptosis induction, as demonstrated by evaluation of phosphatidyl serine membrane translocation and dapi staining. On the contrary MYR and NAR effect depends on the cell cycle progression impairment.

Wound-healing and cell invasion assays, respectively performed by cell monolayer scratch and Boyden Chamber transwell test, demonstrate that the two flavonoids are able to reduce motility and invasiveness on both SCC-25 and HaCaT cells.

In conclusion the results of the present study show the anticancer potential of NAR and MYR on OSCC, since both flavonoids prevent cancer cell proliferation through a cytostatic effect, by the impairment of cell cycle progression. Moreover both the flavonoids inhibit cell migration, thus highlighting their potential effect as anti metastatic agents.

Key words

Myricetin, Naringenin, OSCC, in vitro, anticancer effect.