Dipeptidyl peptidase-IV (DPP-IV, EC 3.4.14.5) together with fibroblast activation protein-alpha (FAP), DPP-7, -8 and -9 belong to the functionally defined group of "DPP-IV activity and/or structure homologues" (DASH). They hydrolyse N-terminal X-Pro dipeptides from a number of biologically active peptides like neuropeptide Y, substance P and chemokines such as stromal cell derived factor-1alpha (SDF-1). Limited proteolysis of such mediators by DPP-IV-like enzymatic activity can modify consequent biological responses of the target cells. By that, DASH molecules are supposed to be important for multiple cellular processes, including cell proliferation, malignant transformation, migration and invasion and thus involved in cancer development and progression.

This study was set up to characterise DASH expression pattern and DPP-IV-like enzymatic activity in human astrocytic tumours in comparison with non-tumorous brain tissue, and to assess its context with the expression of receptors of some local mediators- DASH substrates implicated in gliomagenesis. Moreover, the possible functional relevance of DASH molecules in growth properties of transformed astrocytic cells was studied in model of primary cell cultures derived from the glioblastoma in vitro.

(...)

Hence we speculate that although the upregulated DPP-IV potentially trims down SDF-1 signalling, such effect may be compensated by an increase of the appropriate receptor. This would then favour progression of astrocytoma containing cell population capable of effective tuning of CXCR4-DPP-IV balance within the tumour microenvironment. Taken together, our results suggest, that DASH molecules, namely DPP-IV might execute an anti-oncogenic effect in transformed cells themselves, while it could still be beneficial to other cell populations within the complex tumour environment, with a resultant net pro-oncogenic effect.