

The potential for chemical mixtures from the environment to enable the cancer hallmark of sustained proliferative signalling

ABSTRACT

The aim of this work is to review current knowledge relating the established cancer hallmark, sustained cell proliferation to the existence of chemicals present as low dose mixtures in the environment. Normal cell proliferation is under tight control, i.e. cells respond to a signal to proliferate, and although most cells continue to proliferate into adult life, the multiplication ceases once the stimulatory signal disappears or if the cells are exposed to growth inhibitory signals. Under such circumstances, normal cells remain quiescent until they are stimulated to resume further proliferation. In contrast, tumour cells are unable to halt proliferation, either when subjected to growth inhibitory signals or in the absence of growth stimulatory signals. Environmental chemicals with carcinogenic potential may cause sustained cell proliferation by interfering with some cell proliferation control mechanisms committing cells to an indefinite proliferative span.