Opinion

Therapeutic perspectives beyond the pathogenic properties of the microbes

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Microbes had been a problem and a challenge for the health care mainly due to the diseases they can cause, as well as the other negative impacts on economy and ecology related to their epidemiological aspects and both history and medicine have reported severe cases of illustrative examples.[1-6] With the development of sciences and technologies humans learned how to protect themselves from microbes and went further by starting to use microbes for their own benefits mainly in health care but also in other domains such as food production and biological researches. For instance, in food and beverage production we use some yeasts and bacteria for proposes such as fermentation and we use enzymes produced by genetically modified microorganisms in biological researches such as digestive enzymes used cell culture and restriction enzymes used in genetic researches. In the medical fields, the best examples remain the immunological applications including vaccines and antibodies productions with different examples that can be cited here in. Moreover, genetically modified bacteria are also used to produce active molecules such as insulin used to treat diabetes.

Modern applications became more sophisticated and more precise. Indeed, virus are used to introduce selected genes into cells to provide those cell with new properties such as producing a protein or modifying the cell physiology, this can be used in biology in developing animal models.[11-13]

To test drugs for some human diseases including Alzheimer's disease.[14,15] This method has been reported in literature as a promising therapeutic approach named "gene therapy" which consists in introducing a gene to a group of cell via a virus in order to treat of control a disease or a pathological situation.[16-20] It is also possible to introduce the virus *In Vitro* to a group of cells (for example stem cells) before we transplant those cell that would carry a gene(s) (From the viral infection) corresponding to the property we are willing to provide the cells with Importantly, future advances may lead to completely new and innovative applications of the properties that microbes have. For instance, we can predict that the cytolytic properties of the virus may be used to kill the tumoral cells.[21] We might use a virus specific to certain type of tumoral cells to treat cancerous. To "control" the virus replication and prevent the infection of the healthy cells by the virus, we may combine this virus injection with an anti-viral therapy by an exact calculation of both the virus dosage and the antiviral concentration. Of course, the routes of administration remain a key element and in this case we would propose a local injection of the virus and a systemic injection of the antivirus. Furthermore, the use of microbes as immune-stimulators remains a possibility as well.

These examples illustrate the possible therapeutic application of microbes that would allow us to move to a level in which we overcome the pathogenic properties toward a beneficial therapeutic usage especially with the advances in the related areas such as cell culture,[22] genetic, pharmacology,[13,14,23,24] natural[15,23-26] or chemical products[27,28] and microbiology within the context of a well-understanding of diseases biochemical interactions and pathogenesis and cellular pathways.[25,28-33]

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Conflicts of Interest

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