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Astrocytes: emerging role in immunomodulation and therapeutics an inclusive review

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Abstract:The brain contains certain key elements that aid in the processing of information. These astrocytes can modulate the activity at the synapse by altering the extracellular space volume, ion and neurotransmitter homeostasis. They also provide structural as well as metabolic support and regulate brain wiring and neurogenesis. Astrocytes in the human brain are much different from their rodent counterparts. The dysfunctioning of the astrocytes in the brain plays an important part in neuronal dysfunction which contributes in the pathogenesis in various disorders of the brain. On the contrary if we are able to alter the astrocyte dysfunction and target them for the therapy of brain diseases to bring about novel and effective approaches in time. The chronic pain pathogenesis take into account a number of cellular interactions between neuron like CNS-resident cells, microglia and astrocytes. Following the damages in the peripheral tissue, the astrocytes in the spinal cord transit to reactive conditions as well as have an active part in the mechanisms behind the nerve instilled pain. Studies have been done to prevent inflammatory-reactive activity of astrocyte and to restore inflammatory deregulation cellular changes. Astrocytes are now to show either strong pro-inflammatory action or crucial anti-inflammatory protective functions that are regulated by certain signaling inputs. The objective of this study is to summarize the different works that have been done in the last 15 years on astrocytes to bring about their role in immunomodulation and immunotherapy of various neuronal diseases like Alzheimer's disease, Down's syndrome, Stroke and the like.

Keywords: Astrocytes, immunomodulation, therapeutics.

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