щью тиазовивина. Он представляет собой малую селективную молекулу, которая непосредственно воздействует на ROCK и увеличивает экспрессию факторов плюрипотентности. Процесс получения ИПСК с использованием тиазовивина может быть проще, быстрее и дешевле, чем без него (Hwang et al., 2008; Mohseni et al., 2015).

ЗАКЛЮЧЕНИЕ

Представленные в обзоре данные демонстрируют разнообразие функций малых ГТФаз семейства Rho в различных клеточных процессах. В целом изучение малых ГТФаз остается активной областью исследований и в будущем может привести к созданию новых методов диагностики и лечения различных заболеваний, включая рак, нейродегенеративные, аутоиммунные и сердечно-сосудистые.

Поскольку малые ГТФазы семейства Rho регулируют клеточную подвижность, они являются потенциальными мишенями для разработки новых методов эффективного подавления способности опухолевых клеток к инвазии и метастазированию; методов, основанных на применении ингибиторов как самих малых ГТФаз семейства Rho, так и ассоциированных с ними киназ.

Кроме того, такие ингибиторы могут оказывать дополнительный эффект путем блокирования ангиогенеза, сокращая поставку питательных веществ и кислорода в опухоль и тем самым замедляя ее рост.

Однако в настоящее время ингибиторы малых ГТФаз имеют ограниченную эффективность и могут вызывать нежелательные побочные эффекты, поэтому для разработки новых лекарственных препаратов необходимо более глубокое исследование механизмов регуляции малых ГТФаз семейства Rho в различных условиях и клетках разных типов.

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THE ROLE OF THE Rho FAMILY SMALL GTPases IN REGULATION OF NORMAL AND PATHOLOGICAL PROCESSES

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Small GTPases are small (about 21 kDa) proteins that regulate many biological processes, such as vesicle transport, cell division cycle, cell migration, invasion, adhesion, proliferation and DNA repair, they are involved in carcinogenesis and neurodegenerative diseases. Some of these proteins, like those in the Rho family, are important regulators of the actin cytoskeleton, which has an impact on cell adhesion and motility. The review considers normal and pathological processes in human cells, which are regulated by the Rho family small GTPases. Particular attention is paid to inhibitors of small GTPases and their use in the treatment of various diseases.

Keywords: cytoskeleton, small GTPases, Rho, ROCK, mesenchymal stem cells, replicative senescense, carcinogenesis, invasion