

· 综述 ·

丹参酮 II A 对脑缺血后炎症反应影响机制的研究进展

1, 1.2, 3 (1. 230012; 2. 200125; 3. 200433)

[摘要] 丹参酮 II A 是丹参的主要活性成分之一，属于萘醌类化合物。脑缺血后炎症反应在脑缺血性损伤的病理过程中起着重要的作用。近年来，越来越多的证据表明免疫细胞、黏附分子、炎症介质等参与了中枢神经系统炎症反应的病理过程。本文就丹参酮 II A 对脑缺血后炎症反应影响机制的研究进展进行了综述，为丹参酮 II A 在脑缺血性损伤中的保护作用提供新的思路。

[关键词] 丹参酮 II A; 脑缺血; 炎症反应

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Progress of tanshinone II A on the mechanism of inflammatory response after cerebral ischemia

FENG Jingjing¹, LI Tiejun^{1,2}, ZHANG Yuefan³ (1. School of Pharmacy, Anhui University of Chinese Medicine, Hefei 230012, China; 2. Department of Pharmacy, Punan Hospital of Pudong New Area, Shanghai 200125, China; 3. Department of Pharmacology, School of Pharmacy, Second Military Medical University, Shanghai 200433, China)

[Abstract] Tanshinone II A is a kind of phenanthraquinone derivatives derived from *Salvia miltiorrhiza*, which is one of the main active components of Danshen to play the protective role of cerebral ischemic injury. Inflammation plays an important role in the pathogenesis of cerebral ischemia. In recent years, much evidence shows that immune cells, adhesion molecules, inflammatory mediators have been involved in the pathogenesis of immune response in the central nervous system through induction or regulation of cerebral ischemia. In this paper, the research progress of mechanism of inflammatory response of tanshinone II A after cerebral ischemia was reviewed, which provided a new idea for the study of the protective mechanism of tanshinone II A in cerebral ischemia.

[Key words] tanshinone II A; cerebral ischemia; inflammatory response

丹参酮 II A 是丹参的主要活性成分之一，属于萘醌类化合物。丹参酮 II A 具有抗炎、抗氧化、抗凋亡、抗血栓形成等作用。脑缺血后炎症反应在脑缺血性损伤的病理过程中起着重要的作用。近年来，越来越多的证据表明免疫细胞、黏附分子、炎症介质等参与了中枢神经系统炎症反应的病理过程。本文就丹参酮 II A 对脑缺血后炎症反应影响机制的研究进展进行了综述，为丹参酮 II A 在脑缺血性损伤中的保护作用提供新的思路。

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[作者简介] 杨晶晶, Tel: 13764505490, Email:

fengjj1993@163.com

[通讯作者] 李 tiejun, Tel: 13764505490, Email: ljt204@163.com

Tel: (021) 20302289, Email: ljt204@163.com

1 参与脑缺血后炎症反应的细胞

1.1

IL-6

,IL-6

IL-6

Jung [15]

IL-6

[7,8] Cai [9]

II A NLRP3

Zhou [16]

Caspase-1、-1β(IL-1β) IL-18

II A IL-6

OGD/R BV2

2.2

-α(TNF-α)

TNF-α

TNF-α

BV2

II A

1.2

TNF-α

:①

(glial fibrillary acidic protein ,GFAP)

ET

, PAF、TXA、

[11] Zhou [12]

II A

;②

、NO

GFAP

;③

Yang [13]

II A

ision ,MCAO)

(middle cerebral artery occlu-

II A

HIF-1a/SDF-1

II A

TNF-α

[17]

3 细胞黏附分子

2 细胞因子

2.1

IL-1β,

:①

[18]

EAA

;②

Ca²⁺

(ICAM-1)

;③

;④

ICAM-1

IL-1β

IL-1β

IL-1β、TNF-α NF-κB

,ICAM-1

Tang [19]

II A

[14]

II A

ICAM-1

IL-1β

4 炎性介质

， MCP-1、MCP-5、MIP-1a
MIP-2
，
，
，
(reactive oxygen species ,ROS)
[20, 21] 。 NO
(eNOS) ，
、 [22] 。
(iNOS) ， mRNA ， iNOS
， NO ， iNOS
[23] 。 Tang [24]
II A iNOS 、 NO
TNF- α 。
(matrix metalloproteinase ,MMP) -
，
， MMP
-
[25] 。 MMP-9
，
， [26] 。 Zhu [27]
II A ROS
MMP-9 ，
。

5 转录因子

κ B(nuclear factor of κ B ,NF- κ B)
B
， NF- κ B
，
TNF- α 、 ICAM-1、
COX-2) iNOS
II A NF- κ B
，
。 Dong [29]
NF- κ B
， NO ， II A
。 NF- κ B

， B1 (high mobility group
box 1 ,HMGB-1)
。 Wang [30]
II A HMGB-1 ， NF- κ B ，
，
。(macrophage migration
inhibitory factor ,MIF)
。 MIF
，
[31] 。 Chen [17] ， II A
MIF ， NF- κ B ， TNF- α
IL-6 ，
。
，
、 “ ” 。
、
。 II A
II A
，
。

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