

03.11.2014. , 4600/11,

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83

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16

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(RCC)

(HIF )

(EPO),  
(VEGF)

(EPOR),  
1 2.

Von

Hippel-Lindau

(VHL)

HIF-1 ,

(PHD) 1 2, , VEGF-

, a

90 (Hsp90),

(MAPK),

3 (PI-3/Akt)

„Janus kinaz 2”

“Signal Transducer and Activator of

Transcription 5” (JAK2-STAT5)

( ) .

(NIDDK, National Institutes of Health,

NIH)

Real time PCR .

Real time PCR

R, , MAPK PI-3/A ,

VEGF . 16 5 .  
, PHD1, PHD2 MAPK

VEGF / *VHL* .

*VHL*

VEGF- ,

HIF-1

*VHL* ,

PHD2.

POR

174 .

)

*VHL* . 58%

*VHL* .  
 .  
 HIF-1 $\alpha$  VHL .  
 ,  
*VHL* HIF-1 .  
 , PHD1 PHD2  
 HIF-1 , PHD1  
 PHD2 , *VHL* .  
 , *VEGF*-  
*EPO*, 23/50 , -  
 HIF-2 $\alpha$ , HIF1 $\alpha$ ,  
*VHL* .  
 , MAPK PI-3/ . MAPK  
 PI-3/ , *VHL* .  
 . R  
 JAK2-STAT5  
 .  
 , . ,  
 ,  
 .  
 PI3/  
 .  
 )  
*VHL*  
 .  
*in vitro* ,  
 . M  
*VHL*

(Clifford S et al.,1998)).

(60%)

*VHL*

90%

(Kondo K et al., 2002., Banks RE, et al., 2006.; Young A et al., 2009.).

HIF-

*VHL*

HIF-1 (Gordan et al. 2008.).

*VHL* ,

(Huang D, et al.

2008.).

VEGF- u

(Zhang Y, et al. 2010.) je

IF-2 /c-Myc

(Shen C, Kaelin W, 2013).

Cokic B et al. 2011; Beleslin Cokic B et al. 2014).

(Beleslin

PI-3/Akt .

)

1. **Beleslin Cokic B**, Cokic VP, Suresh S, Wirt S, Noguchi CT. Nitric oxide and hypoxia stimulate erythropoietin receptor via MAPK kinase in endothelial cells. *Microvascular Research* 2014; 92: 34-40.

2. **Beleslin- oki BB**, Coki VP, Wang L, Piknova B, Teng R, Schechter AN, Noguchi CT. Erythropoietin and hypoxia increase erythropoietin receptor and nitric oxide levels in lung microvascular endothelial cells. *Cytokine* 2011; 54: 129-135.

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RCC- .

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