

Mammalian wound healing by the treatment with excretory-secretory product and lysate of the trematode *Opisthorchis felineus*

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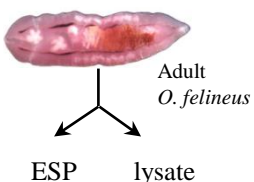
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INTRODUCTION

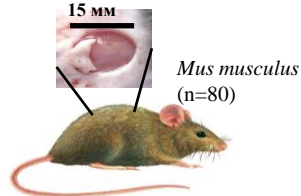
- The nonhealing wounds - a serious problem for people with diabetes, smokers and old-aged people.
- Opisthorchis felineus* - one of the causative agents of opisthorchiasis.
- Parasite has the ability to reduce acute inflammation, stimulate the repair of epithelial cells (cholangiocytes) damaged by helminths.
- Objective:** To study the stimulation of wound healing in C57BL/6J mice by the treatment with the *O. felineus* excretory-secretory product (ESP) and lysate with the assessment of wound area, histology and Real-time PCR.

METHODS

1. Obtaining solutions



2. Create full-thickness wounds



3. Experimental model



RESULTS

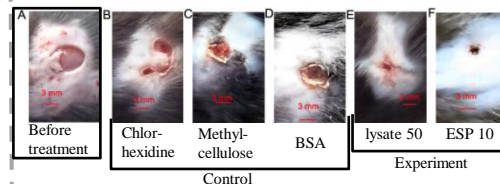


Figure 1. Reduction the size of the full-thickness wound of mouse's skin before and after 7 days of treatment. A: before treatment, on day 0; 7 days after treatment: B; C; D; E: 10 µg ESP of *O. felineus*.

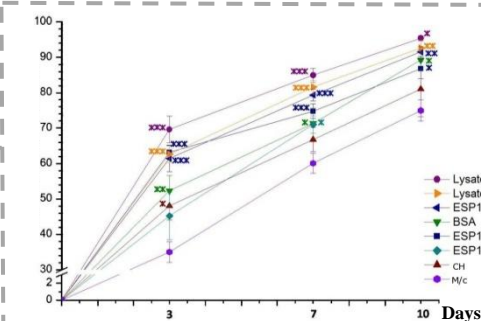


Figure 2. % of overgrowth of the wound area. CH: chlorhexidine; ESP10: concentration of 10 µg (we - without endotoxin); Mc: methylcellulose. Compared with methylcellulose. *P < 0.05; **P < 0.01; ***P < 0.005, test M-U.

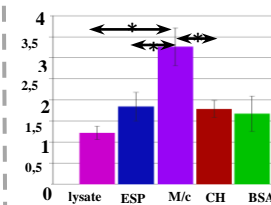


Figure 3. The area of the inflammatory infiltrate in the wounds of mice in mm². ESP 10: concentration of 10 mg/µl; CH: chlorhexidine; M/c: methylcellulose. * P < 0.05, test M-U.

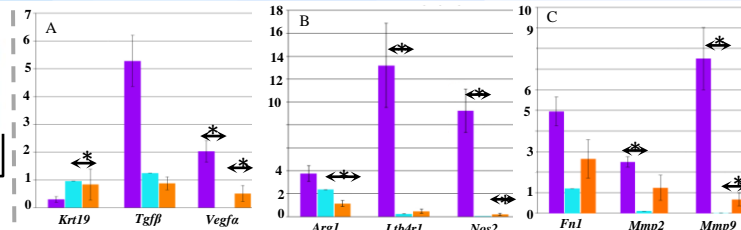


Figure 4. Gene expression mRNA associated with cell proliferation (A), inflammatory response (B), organization of the extracellular matrix (C) 10 days after injury. mRNA are normalized to mRNA of the Gapdh gene. Methylcellulose; healthy skin; Lysate 10: concentration of 10 µg/µL. * P < 0.05, test M-U.

Table 1. 10 major proteins in the ESP, identified by mass-spectrometry

Protein	Abundance, %
Globin	76,6
Ferritin	10,5
Glutathione S-transferase	3,2
Tetraspanin	1,6
Redoxin	1,3
Ubiquitin family	1,1
Histone H2A	1,0
Glutathione S-transferase	0,7
Host defence molecule - 1	0,7
Unknown 2	0,5

CONCLUSION

The treatment with the *O. felineus* ESP and lysate promotes accelerated healing of full-thickness wounds. Presumably, the liver fluke produces factors that can be used to stimulate the mammalian tissue regeneration. The activity of the individual components of the secretory product must be further investigated in more detail.

ACKNOWLEDGMENT

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