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**Title:** Respiratory consequences of fluid replacement with autologous blood or colloid solution after acute haemorrhage in rats

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**Body:** Acute haemorrhage and blood replacement modulate airway resistance (Bayat, S. et al. J Appl Physiol 2011; 111:458-64). We aimed at: i) developing a blood loss/replacement model without inducing severe hypovolemia and ii) comparing the respiratory mechanical consequences of blood replacement with colloid or autologous blood. Anaesthetized, mechanically ventilated rats were bled in two steps until losing 10% of their total blood volume (TBV). 5% of the sequestered blood was then replaced with either the animals' own heparinized blood (n=7) or colloid (6% HES, n=5). Removal/replacement of 5% of TBV was then repeated 4 times (Figure, top). Arterial haematocrit levels (Hct) were evaluated. Airway resistance (Raw), constant-phase tissue damping (G) and elastance (H) were assessed by forced oscillations at each step. Only colloid replacement decreased Hct ( $30.1 \pm 1[\text{SE}]%$  vs.  $20.4 \pm 2%$ ,  $p=0.02$ ). Blood removal decreased Raw and increased G and H ( $p<0.05$ ). Blood replacement with a colloid restored the haemorrhage-induced decreases in Raw, whereas Raw remained lower ( $p<0.05$ ) after the readministration of blood.

We conclude that readministration of autologous blood does not reverse the haemorrhage-induced bronchodilation that can be either due to the relaxation potential of heparin and/or presence of bronchoactive mediators in the sequestered blood. Grant support: TÁMOP 4.2.4.A/2-11-1-2012-0001, OTKA K81179.