

## **Evaluation of Ventriculo-cisternal Perfusion Model as a Method to Study Cerebrospinal Fluid Formation**

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**Aim.** To evaluate ventriculo-cisternal perfusion as a method for measuring cerebrospinal fluid formation rate, calculated by means of the Heisey et al equation.

**Method.** All experiments were carried out on anesthetized domestic cats fixed in the sphinx position in a stereotaxic frame. Ventriculo-cisternal perfusion was used at an intracranial pressure of -10 cm H<sub>2</sub>O at different perfusion rates (32.0, 65.5, 125.0, and 252.0 mL/min). Dextran blue was applied as an indicator substance and the concentration of the indicator was measured with a spectrophotometer at a wavelength of 635 nm. Cerebrospinal fluid formation rate was calculated with the equation of Heisey et al.

**Results.** The indicator substance was less diluted at a higher perfusion rate, and the calculated cerebrospinal fluid formation rate was lower. The increase in perfusion rate from 65.5 to 125.0 to 252.0 mL/min increased the concentration of indicator substance from 0.75 to 0.89 to 0.97 mg/mL and decreased calculated cerebrospinal fluid formation rate from 21.8 to 15.4 to 7.8 mL/min. This reduction was linear and an increase in the perfusion rate by 1.0 mL/min decreased the cerebrospinal fluid formation rate by 0.05 mL/min.

**Conclusion.** The calculated cerebrospinal fluid formation rate depends on different perfusion rates. The increase in the perfusion rate diminishes the calculated formation rate. Ventriculo-cisternal perfusion may not be a suitable method to calculate the cerebrospinal fluid formation rate according to the equation of Heisey et al.

**Key words:** cerebrospinal fluid; intracranial pressure; spectrophotometry; stereotaxic techniques