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# Cerebrospinal fluid

# Definition

Cerebrospinal fluid is a clear fluid that surrounds the brain and the spinal cord .it is an ultra filtrate of blood plasma and is contained within the subarachnoid space and the central canal 9f the spinal cord .

## Contents of CSF

### CSF :: blood

Ph

7.33 7.41

Osmolarity

295 295

# Mechanism of absorption of CSF

* By filtration due to pressure gradient between hydrostatic pressure in the subarachnoid space
* And the pressure that exists in the dural sinus blood
* The colloidal substance pass slowly and crystalloids are absorbed rapidly

# Absorption of CSF

* Mostly absorbed by the arachnoid along the villi into dural sinuses and spinal veins
* Small amount is absorbed along the perineural space into cervical lymphatic and into the perivascular space
* Normally 500 mL of CSF is formed everyday and equal amount is absorbed.

# Pressure excreted by CSF

Varies in different position

Lateral recumbent position =10-18 cm of H2O

Lying position =13 cm of H2O

Sitting position =30 cm of H2O

Coughing and crying increase the pressure by decreasing the absorption

Compression of internal jugular vein also raises the CSF pressure

# Flow of cerebral spinal fluid

1. CSF is secreted by choroid plexus in each lateral ventricle
2. CSF flows through interventricular foramina into third ventricle
3. Choroid plexus in third ventricle adds more CSF
4. CSF flows down cerebral aqueduct to fourth ventricle
5. Choroid plexus in fourth ventricle adds more CSF
6. CSF flows out two lateral apertures and one median aperture
7. CSF fills subarachnoid space and the bathes external surface of brain and spinal cord
8. At arachnoid villi CSF is resorbed into venous blood of dural venous.

# Function of CSF

## Buoyancy

The brain weigh 1400g but due to the presence of CSF creating a bath .it only has a net weight of 50g .the brain otherwise is only supported within the arachnoid space by blood vessels and nerve roots which are fragile structure.

# Protection

CSF acts as a shock absorber preventing damage from occurring to the brain when the cranium is jolted hit

# Homeostasis

Regulate the distribution of metabolites surrounding the brain keeping the environment ideal to prevent any damage to the nervous system.

# Clearing waste

Waste products by the brain move into the CSF which then clear out through the arachnoid granulation into the venous sinus so it can be absorbed into the bloodstrea

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