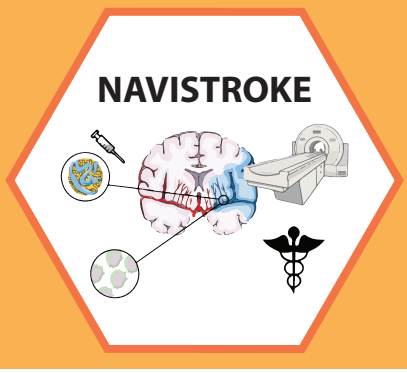
Nanomedicine to Visualize and Treat Inflammation after Stroke



1 What does the NAVISTROKE project entail?

- We are a multidisciplinary research team working together to search for an improved treatment after stroke, using medicines based on cannabinoids.
- The team consists of three research groups:
Van der Stelt lab (U Leiden): Experts on developing drugs
Mulder lab (Radboud UMC Nijmegen): Experts on nanotherapy and the immune system.
Dijkhuizen lab (UMC Utrecht): Experts in stroke research
- Thanks to Sensipharma and the NWO, we can research novel treatment options after a stroke.

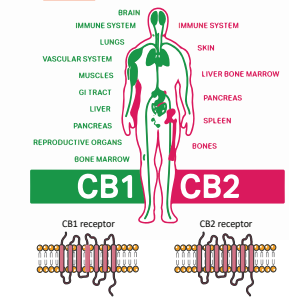
2 What is a stroke?

- In a stroke, the blood supply to the brain is restricted
- In ischemic stroke, the blood vessel is blocked by a clot
- In hemorrhagic stroke the blood vessel ruptures causing a bleed
- Stroke often causes persistent disabilities, which can have enormous consequences for the patient and family.

Ischemic stroke
80% of patients

Hemorrhagic stroke
20% of patients

3 What is the cannabinoid system?



- The cannabinoid system was discovered by researchers studying the effect of cannabis products (CBD,THC) on the body
- It's a complex system that has a special function in many organs
- As its primary function, it keeps balance in biological processes (homeostasis)

4 Our goal

To investigate novel treatment options after stroke, which utilize the cannabinoid system

Why novel treatment options?

Every day 110 patients suffer a stroke

372.000 people have to live with disabilities as a consequence of stroke

There are two available treatments to remove the thrombus

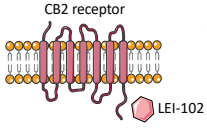
Only 46% of patients improve due to treatment

Opportunities for new treatments

5 Project overview

Step 1

Development and testing of the drug



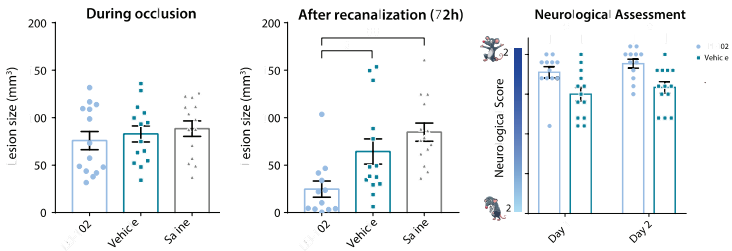
Step 2

Targeted treatment of the drug through Nanotechnology development

Step 3

Testing the effectiveness of the drug against stroke

6 Results and future plans



- Before treatment, all mice had an equal amount of brain injury
- After treatment, all mice treated with the drug (LEI-102) had less brain injury than the other groups
- After treatment with LEI-102 mice also showed functional improvement
- As a next step, the targeted treatment will be tested, in which LEI-102 will be combined with nanotechnology

SENSIPHARMA

UMC Utrecht

Radboudumc university medical center

Universiteit Leiden