

were stained with hematoxylin and eosin, Masson's trichrome and immunoreacted for markers of striated and smooth muscle (sarcomeric actin and smooth muscle actin, respectively).

**Results:** Two weeks after urethrolisis, a marked reduction of muscle fibers in the EUS was detected. A recovery was evident in lesioned, bupivacaine injected animals when compared with lesioned and saline-injected controls.

**Conclusion:** Our data show that bupivacaine application in the lesioned external urethral sphincter accelerates its recovery. This finding opens a therapeutic opportunity to treat stress urinary incontinence.

**Acknowledgements:** This study has been funded by FEDER - Fundo Europeu de Desenvolvimento Regional funds through the COMPETE 2020 - Operacional Programme for Competitiveness and Internationalisation (POCI), Portugal 2020, and by Portuguese funds through FCT/Ministério da Ciência, Tecnologia e Ensino Superior in the framework of the project "Institute for Research and Innovation in Health Sciences" (POCI-01-0145-FEDER-007274).

<http://dx.doi.org/10.1016/j.pbj.2017.07.068>

## PS074

### In vivo and in silico study of allicin as a stroke prevention



Alfryan Janardhana\*, M. Naufal Al Hasan,  
N. Edvin Prawira

DR. dr. Yuyun Yoeniwati P.W. M.kes., Sp Rad (K),  
Indonesia

E-mail address: [ryanjanardhana@gmail.com](mailto:ryanjanardhana@gmail.com)  
(A. Janardhana).

**Aim:** To prove allicin effect to prevent stroke in insilico and invivo method.

**Introduction:** Stroke is a disease that can cause permanent disability, even death. Atherosclerosis is one of the cause of stroke. One way to prevent stroke is to treat atherosclerosis using allicin. Allicin works by inhibiting Integrin Alpha Beta-3 and ApoE proteins. Therefore, allicin can be considered as an alternative in stroke prevention.

**Methods:** This is true experimental study with two methods. Allicin was taken from pubchem, while ApoE with code (1EA8), Integrin Alpha Beta-3 with code (1JX5) taken from protein data bank. Afterwards, the ligands and macromolecule were docked with Pyrx. Analysis was done using Discovery Studio. Pharmacokinetic study, allicin compounds were analyzed with ACD/I-Lab. During invivo study, rats were induced with high fat diet for 8 weeks and were given allicin with dose 5, 10, 20 mg/kg BW during 6 weeks. Rat blood, carotid artery, and brain were analyzed for lipid profile, foam cells in blood vessels, and immunohistochemically to see BDNF.

**Results:** Pharmacokinetic results showed that allicin has oral bioavailability above 70%, distributed through lipoproteins and a few albumins. Allicin can penetrate through membrane and cytoplasm, affecting its target. Pharmacodynamically, allicin can bind to active site of ApoE on 149 leucine, and to active site of ApoE on 173 serine. Allicin bound with active site of ApoE will increase ApoE expression, thus lowering lipid profile except HDL. Meanwhile, allicin bound with active site of Integrin Alpha Beta-3 blocked platelet aggregation. Decreasing Integrin Alpha Beta-3 was proven by invivo results where foam cells were decreasing. These events caused a decrease foam cell in common artery, causing no brain hypoxia and increased BDNF. Invivo test showed a decrease in foam cells on 10 mg/kg BW. On the contrary, the brain showed an increase in BDNF amount on 20 mg/kg BW.

**Conclusion:** Based on insilico and invivo studies, allicin can be considered as a preventive treatment to stroke by inhibiting atherosclerosis development by increasing ApoE, lowering Integrin Alpha Beta-3 protein, and increasing BDNF.<sup>1-5</sup>

## References

1. American Heart Association. Atherosclerosis; 2014 [http://www.heart.org/HEARTORG/Conditions/Cholesterol/WhyCholesterolMatters/Atherosclerosis\\_UCM\\_305564\\_Article.jsp#.WAixhZN95sM](http://www.heart.org/HEARTORG/Conditions/Cholesterol/WhyCholesterolMatters/Atherosclerosis_UCM_305564_Article.jsp#.WAixhZN95sM)
2. Goldstein, et al. History of discovery: the LDL receptor. NIH Public Access. 2009;29:431–8.
3. Xiao-Hua, et al. Foam cell in atherosclerosis. Elsevier; 2013.
4. Freeman WM, Patel KM, Brucklacher RM, Lull ME, Erwin M, Morgan D, et al. Neuropsychopharmacology. 2008;33:1807–17.
5. Aruoma OI, Sun B, Fujii H, Neergheen VS, Bahorun T, Kang KS, et al. Low molecular proanthocyanidin dietary biofactor Oligonol: its modulation of oxidative stress, bioefficacy, neuroprotection, food application and chemoprevention potentials. Biofactors. 2006;27:245–65.

<http://dx.doi.org/10.1016/j.pbj.2017.07.069>

## PS148

### Anxiety-like behavior in elevated plus maze upon sleep fragmentation of one light phase of rats' circadian cycle



A. Leković\*, A. Ademović, Ž. Grubač, N. Šutulović,  
B. Knežević, M. Novaković

Institute of Medical Physiology "Richard Burian",  
Belgrade University School of Medicine, Serbia  
E-mail address: [aleksa.lekovic@gmail.com](mailto:aleksa.lekovic@gmail.com)  
(A. Leković).

**Aim:** To assess anxiety-like behavior in rats after twelve hours of sleep fragmentation during the light phase of sleep-wake cycle, using the elevated plus maze test.

**Introduction:** Hallmark of sleep fragmentation is set of frequent, brief arousals, which modulates sleep architecture without significant diminishment of total sleep time. Anxiety is recognized as comorbidity in numerous disorders, including some of those related to sleep quality. Sleep fragmentation may be appropriate model of sleep alteration pattern in some disorders, yet its effects on behavioral alterations have not been broadly investigated.

**Methods:** Sleep fragmentation was achieved by treadmill method lasting for 12 h, during the light phase of the day (starting at 8 AM). Wistar albino male rats were randomly divided into: sleep fragmentation group (SF,  $n=8$ , treadmill programmed to alternately work 30 s ON and 90 s OFF every 2 min); activity group (AC,  $n=8$ , treadmill programmed to alternately work 10 min ON and 30 min OFF); and treadmill control group (TC,  $n=8$ , rats stayed in the treadmill set to OFF mode and conditions equivalent to cages). Immediately after the sleep fragmentation regimen, elevated plus maze test was performed. To assess anxiety-like behavior, we measured time spent in the open arms, as well as number of transitions between open and closed arms.

**Results:** SF group spent significantly less time in the open arms compared to both, AC and TC group ( $p < 0.001$ ). SF rats also had significantly less number of transitions between closed and open arms of the maze, compared to AC and TC group ( $p < 0.05$ ). Moreover, no significant difference was observed in any of the measured parameters between TC and AC group.

**Conclusion:** The results of our study indicate that acute 12-h sleep fragmentation induced anxiety-like behavior in rats in elevated plus maze. Further research should help us better understand impact of this phenomenon on psychiatric disorders.

<http://dx.doi.org/10.1016/j.pbj.2017.07.070>