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**Orexin receptor 1 in the anterior cingulate cortex regulates effort-based decision making**Sara Karimi<sup>1</sup>, Gholam ali Hamidi<sup>1</sup> and Abbas Haghparast<sup>2</sup><sup>1</sup>Kashan University of Medical Sciences, Iran<sup>2</sup>Shahid Beheshti University of Medical Sciences, Iran

Orexinergic neurons are discretely localized within the lateral hypothalamus. In addition, several lines of evidence specify that orexins may also participate in the regulation of a variety of affective and cognitive processes. Orexin-1 receptor (OX1r) is distributed extensively throughout the prefrontal cortex. Effort-based decision-making is mediated largely by the anterior cingulate cortex (ACC). Hence, in the present study, we conducted an experiment to clarify the role of OX1r in the ACC in effort-based decision making. 20 male Wistar rats were used in this study. The rats had been trained in an effort-based form of cost-benefit T-maze decision making task. The two goal arms were different in the amount of accessible reward. After the rats had learned unequal size of reward, they then underwent barrier training. Rats were given three training days with a 30 cm barrier. The animals could choose high reward arm (HRA) and pay cost to achieve large reward or obtain a low reward in the other arm (LRA) without any cost. Before surgery, all animals were selecting the HRA on almost every trial. During test days, the rats received local injections of either DMSO 20%/0.5  $\mu$ l, as vehicle, or SB334867 (3, 30, 300 nM/0.5  $\mu$ l), as selective OX1r antagonist, within the ACC. Our results demonstrate profound effects of ACC's OX1r on effort based decision making, SB334867 administration into the ACC, changed the animal's preference to a LRA. These results imply that OX1r has a crucial role for allowing the animal to try to acquire greater rewards.

**Biography**

Sara Karimi is working as a PhD student from Kashan University of medical sciences, Iran. She holds a Master Degree (MSc) in Animal physiology from Shahid Beheshti University, Iran. She is extending her valuable service as a Research Scholar in Dr. Haghparast lab for 2 years and has been a recipient of many award and grants. Her research experience includes various programs, contributions and participation in different countries for diverse fields of study. Her research interests as a Research Scholar reflect in her wide range of publications in various national and international journals.

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