

Letter to editor**Opiate Dependence and withdrawal: Role of oxidative stress in opiate regulations**Hashim SNB¹, Bakar NHA², Mohamad N³

Opiate dependence is defined as the need to take opiate at regular interval to avoid withdrawal syndrome. It occurs because of changes in the brain system especially at the base of the brain in the locus ceruleus. Absence of exogenous opioids will stimulate locus ceruleus brain cells to release excessive amounts of noradrenaline triggering jitter, anxiety, muscle cramps and diarrhea, increased heart rate, increased blood pressure, widening of pupils and widening of air passages in the lungs and narrowing of blood vessels in non-essential organs. On the other hand, when opiate molecule binds to μ receptors on brain cells in midbrain dopaminergic regions, they suppress the release of noradrenaline resulting in drowsiness, slow respiratory rate and low blood pressure¹.

One of the proposed mechanisms that regulate the opiate dependency and withdrawal is oxidative stress. There are two mechanisms involved in the development of oxidative stress; formation of free radicals and reduce activity of antioxidant². The neurotransmitter and gasotransmitters involved are predominantly glutamate and nitric oxide. This proposed mechanism was further supported by

pretreatment with free radicals scavengers attenuated the expression of morphine induced withdrawal syndrome³.

In our study, we are trying to explore the ability of honey as a supplementary therapy to methadone to reduce opiate addiction. This is because honey contains phenolic compound which have higher antioxidant properties. Antioxidants reduce free radicals in oxidative stress pathway. Hence, it blocks of oxidative stress in opiate dependence and tolerance⁴. Phenolic compound has an ability to increase radical scavenging activity by cutting off the formation of free radicals. When the free radicals concentration in the cell is reduced, the oxidative stress was noted to be reduced⁵.

This study is further supported by the fact that the property of honey is healing for human⁶. It corresponded with the result of studies that phenolic compound in honey that actively involved in reducing oxidative stress which occurs due to the presence free radicals presence in the cells. Better understanding on the effect of honey on oxidative stress produced by honey to opiate dependency and withdrawal need to be further explored.

References:

1. Abdel-Zaher AO, Abdel-Rahman MS, ELwasei FM. Blockade of nitric oxide overproduction and oxidative stress by Nigella sativa oil attenuates morphine-induced tolerance and dependence in mice. *Neurochem Res.* 2010; **35**(10):1557-1565.
2. Jitka S, Zdenka D, Jiri N. Morphine as a Potential Oxidative Stress-Causing Agent. *Mini -Reviews in Organic Chemistry.* 2013; **10**:367-372.
3. Kishore RK, Ahmad SH, Syazana N, Sirajudeen KNS. Tualang honey has higher phenolic content and greater radical scavenging activity compared with other honey sources. *Nutrition Research.* 2011; **31** (4); 322-325.
4. Kosten TR and George TP. The neurobiology if opioid dependence: Implications for treatment. *Sci Pract Perspect.* 2002; **1**: 12-20.
5. Mori T, Ito S, Matsubayashi K, Sawaguchi T. Comparison of nitric oxide synthase inhibitors, phospholipase A2 inhibitor and free radical scavengers as attenuators of opioid withdrawal syndrome. *Behav Pharmacol.* 2007; **18**:725–729.
6. Tahereh EO and Moslem N. Traditional and Modern Uses of Natural Honey in Human Diseases: A Review. *Iranian Journal of Basic Medical Sciences.* 2013; **16** (6); 731-742.

DOI: <http://dx.doi.org/10.3329/bjms.v14i2.22784>
Bangladesh Journal of Medical Science Vol.14(2) 2015 p.215

1. Siti Norhajah bt Hashim PhD student, Faculty of Medicine and Health Sciences.
2. Nor Hidayah Abu Bakar, Lecturer.
3. Nasir Mohamad, Professor and Deputy Dean, (Innovation and Research), FPSK, University Sultan Zainal Abidin (UniSZA), 20400, Kuala Terengganu, Terengganu, Malaysia.

Corresponds to: Dr Nasir Mohamad, Professor and Deputy Dean, (Innovation and Research) Faculty of Medicine and Health Sciences, University Sultan Zainal Abidin, 20400, Kuala Terengganu, Terengganu, Malaysia. Email: drnasirmohamadkb@yahoo.com