

Letter to Editor

Melatonin as an alternative to anti-flu vaccine in pregnant women

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Running title: Melatonin to replace anti-flu vaccine during pregnancy

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ABSTRACT

This paper summarizes arguments in favor of replacing anti-influenza vaccines with melatonin in pregnant women, especially those in the first trimester of pregnancy.

Key words: Melatonin, pregnant women, anti-influenza vaccine.

Since 2012, The World Health Organization has considered pregnant women as a priority group for seasonal influenza vaccination, regardless of their stage of pregnancy; to date this recommendation has not changed (1). This position was merely based on observational studies, many of them with significant limitations. New evidence from randomized controlled trials, including two Cochrane systematic reviews (2, 3), have challenged the foundations of this recommendation. In fact, both reviews show that anti-flu vaccines, when administered in the second or the third trimester of pregnancy, provide pregnant women with uncertain or very limited protection against influenza-like illnesses and influenza. Moreover, when administered in the first trimester, some studies pointed out a potential neurodevelopmental risk for the embryo and fetus (4, 5). In view of its low efficiency and possible risks during pregnancy, it was recommended to replace anti-flu vaccines with alternative treatments and measures, especially in the first trimester (1).

Recent data suggest that melatonin represents an excellent candidate for such an alternative treatment. It has already been suggested that melatonin protects against COVID-19. By converting hyper-inflammatory type 1 macrophages to anti-inflammatory type 2 macrophages (6), melatonin has pronounced anti-inflammatory actions (7, 8). Moreover, melatonin may directly inhibit virus replication in infected cells (9, 10). However, only recently have the results of a study provided convincing arguments, based on the analysis of the molecular mechanisms employed by melatonin, to propose the methoxyindole would have utility in limiting the symptomatology and mortality associated with viral infections including influenza and COVID-19 (11). Because of its overall beneficial effect throughout pregnancy (12) and the additional benefit of protection against COVID-19 (6-8), melatonin should be considered a serious candidate for the replacement of the inefficient and potentially harmful anti-flu vaccine in pregnant women.

Several studies have reported that blood melatonin levels are gradually increasing during pregnancy, reaching the maximum in the third trimester, reviewed in Tamura *et al.*, 2008 (13). This can be expected to produce a natural protection against respiratory viral infections. However, this evolution of melatonin secretion during pregnancy can be deficient in some women, leading to pregnancy complications, such as spontaneous abortion, preeclampsia, fetal hypoxia, and inadequate parturition timing (13). In view of the fact that the administration of melatonin can preclude these complications and does not produce any serious adverse effects in pregnant women, the use of melatonin can be considered a viable alternative to anti-flu vaccine in all pregnant women, without the need for any additional blood tests.

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CONFLICT OF INTEREST

The author has no conflicts of interest.

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