

## Message from the Japanese Teratology Society

### Proposal for supplemental intake of folic acid to reduce the risk of neural tube defects

The Japanese Teratology Society releases the following message for reducing the birth of babies with neural tube defects (congenital defects in the brain and/or spinal cord). Women who are planning to get pregnant or those who may be pregnant are advised to reduce the risk of having a baby with such defects by taking 400 microgram (0.4 mg) of supplementary folic acid per day from 4 weeks before impregnation through gestation week 12. We also suggest that women who are at a high risk, such as those having a neural tube defect patient within their family and those having delivered a baby with such defects previously, should take hospital consultation on folic acid intake because the risk of their next babies suffering from neural tube defects is relatively higher than usual.

Neural tube defects (spina bifida, anencephaly and encephalocele) arise at around gestation week 6 (4 weeks after fertilization) to obstruct the normal development of the brain and spinal cord. Most patients with spina bifida need to receive medical treatments including a surgical treatment soon after birth and treatments for hydrocephaly, walking difficulties and/or excretion disturbances, which may be followed by continuous rehabilitation through their whole life. Babies with anencephaly hardly survive after birth and those having encephalocele may suffer from neurological disorders even if the mass on the brain is removed surgically.

Epidemiological studies have shown that maternal intake of folic acid, a kind of water soluble vitamins, decreases the risk of neural tube defects. According to a British epidemiological study (MRC Vitamin Research Group 1991), treatment of women of the high risk group, who have had a baby with neural tube defects previously, with 4 mg/day of folic acid successfully reduced the incidence of these anomalies in the next pregnancy: the preventive efficiency was estimated to be 72%. Another study in China (Berry et al. 1999) also demonstrated the similar preventive effects of folic acid supplementation in primiparas (women bearing their first child) at daily doses of 0.4 mg.

The Japanese Ministry of Health and Welfare (MHW), the present Ministry of Health, Labor and Welfare (MHLW), announced in 2000 that women who are planning to get

pregnant should take 0.4 mg/day of supplementary folic acid, in addition to well-balanced food containing 0.4 mg/day of folic acid (MHW 2000). Daily intake of folic acid at approximately 1 mg/day does not cause excess symptoms (MHLW 2014). However, the percentage of Japanese women who take folic acid supplement is only 10 – 20% (Kondo et al. 2013; Obara et al. 2016) and the incidence of neural tube defects in Japan has remained unreduced (International Clearinghouse for Birth Defects Surveillance and Research 2014, MHW 2000).

The Japanese Teratology Society aims to contribute to the health and welfare of Japanese people by making efforts to prevent the birth of babies with congenital anomalies.

#### REFERENCES

MRC Vitamin Study Research Group (1991) Prevention of neural tube defects: results of the Medical Research Council Vitamin Study. *Lancet* **338**: 131-137.

Berry RJ, Li Z, Erickson JD, Li S, Moore CA, Wang H, Mulinare J, Zhao P, Wong LY, Gindler J, Hong SX, Correa A (1999) Prevention of neural-tube defects with folic acid in China. China-U.S. Collaborative Project for Neural Tube Defect Prevention. *N Engl J Med* **341**: 1485-1490.

International Clearinghouse for Birth Defects Surveillance and Research (ICBDSR) (2014) ICBDSR Annual Report 2014 with data for 2012.

<http://www.icbdsr.org/filebank/documents/ar2005/Report2014.pdf>

Kondo A, Morota N, Ihara S, Saisu T, Inoue K, Shimokawa S, Fujimaki H, Matsuo K, Shimosuka Y, Watanabe T (2013) Risk factors for the occurrence of spina bifida (a case-control study) and the prevalence rate of spina bifida in Japan. *Birth Defects Res A Clin Mol Teratol* **97**: 610-615.

Ministry of Health and Welfare (MHW) in Japan (2000) 12-Jibo no. 72 (in Japanese).

[http://www1.mhlw.go.jp/houdou/1212/h1228-1\\_18.html](http://www1.mhlw.go.jp/houdou/1212/h1228-1_18.html)

Ministry of Health, Labor and Welfare (MHLW) in Japan (2014) Dietary reference intakes for Japanese (in Japanese).

<https://www.icbdsr.org/filebank/documents/ar2005/Report2014.pdf>

Obara T, Nishigori H, Nishigori T, Metoki H, Ishikuro M, Tatsuta N, Mizuno S, Sakurai K, Nishijima I, Murai Y, Fujiwara I, Arima T, Nakai K, Mano N, Yaegashi N, Kuriyama S (2016) Prevalence and determinants of inadequate use of folic acid supplementation in Japanese pregnant women: the Japan Environment and Children's Study (JECS). *J Matern Fetal Neonatal Med* **May 26**: 1-6.