

## USE OF A PRODUCT BASED ON GINGER FOR THE TREATMENT OF HYPEREMESIS GRAVIDARUM

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### Introduction

Nausea and vomiting are frequent symptoms in pregnancy: 50 to 90% of pregnant women experience this condition. However, hyperemesis gravidarum is mentioned when nausea and vomiting are persistent and associated to ketosis and weight loss (>5% of pre-pregnancy body weight): it may cause loss of liquids, alterations in the electrolytes and in the acid-base balance, nutritional deficiencies and may rarely cause death; hospitalization is required in 0.3 to 2% of pregnancies.<sup>1,2</sup>

Actually, nausea and vomiting are a defense mechanism of evolution: they protect the pregnant woman and the embryo against toxic substances that may be present in the food, such as microorganisms present in meat or plant toxins. Their effect is higher during embryogenesis (these symptoms, indeed, usually begin during the 9<sup>th</sup> week and disappear, after a peak at the 11<sup>th</sup> week, during the 13<sup>th</sup> week; they can rarely last longer). This theory is also supported by the fact that pregnancies where the symptoms are higher are less subject to abortion or premature delivery.<sup>3</sup>

### Physiopathology

The etiopathogenesis of hyperemesis gravidarum is quite controversial. It is probably caused by the interaction of biological, psychological and sociocultural factors.<sup>4</sup> Different theories have been proposed. We mention the three most reliable ones.

### Hormonal changes

Women affected by hyperemesis gravidarum show high levels of hCG, that may mime temporary hyperthyroidism. hCG may stimulate the TSH receptor and increase the thyroid hormones, without causing, however, a real hyperthyroidism. In any case, there is a positive correlation between high levels of hCG and FT4: the severity of nausea seems to be correlated to thyroid stimulation. Critics of this theory claim that nausea and vomiting are not usual symptoms of hyperthyroidism, and the symptoms are not always correlated to biochemical abnormalities.

Other studies have pointed to high levels of estrogen and progesterone typical of this first period of pregnancy, but they did not reach any conclusion.<sup>5</sup>

### Gastrointestinal dysfunction

An abnormal myoelectrical activity of the gastric pacemaker may cause dysrhythmia in the peristaltic contractions of the stomach, and this, in turn, may cause nausea. High levels of progesterone and estrogens, thyroid disorders, abnormalities in the vagal or sympathetic tone, all of them occurring in premature pregnancy, may be at the basis of hyperemesis gravidarum disorders.

### Psychological cause

Numerous cases of hyperemesis gravidarum are expressions of a psychosomatic disorder.

This would consist in an unconscious "reaction of rejection" towards pregnancy or towards the environment surrounding the pregnant woman. This theory is strengthened by the improvement or even the disappearance of hyperemesis in pregnant women moved away from psychologically stressful situations and environments.<sup>6,7</sup>

### Epidemiology

Hyperemesis gravidarum seems to be more frequent in industrialized societies and in urban areas and affects 0.3 to 2% of all the pregnancies. Its mortality was high before 1940, even because treatment of hyperemesis gravidarum or incoercible vomiting also included the therapeutic interruption of pregnancy. Nowadays it rarely causes death; however, it causes loss of working days and discomfort in the patient, it may worry her relatives and its most severe forms can be highly debilitating.

There is no predominance of race or ethnicity and the pathology seems to decrease with the age of the woman.<sup>4</sup>

Although nausea and vomiting are common experiences among pregnant women, they may cause suffering even in mild and moderate forms. There are only a few pharmacological therapies and not always effective, and the patients or the doctors are often cautious in taking or prescribing therapies in this period of pregnancy, the first trimester, that is so important for embryogenesis. Research in the last few years has not lead to the development of new innovative therapies and, consequently, this pathology is highly relevant.

### Ginger and hyperemesis gravidarum

Ginger is a plant native to India, well known in gastronomy and used in traditional medicine from the ancient times. It is mentioned in Confucius works, in the Quran and in medicine books of the Middle Ages.

For pharmacological purposes, ginger is present in the market in the following forms: rhizome, powder, fluid extract, mother tincture, essential oil and dried extract.



Ginger has been proved to perform, both in the animal and the human, a powerful antiemetic action; a direct effect of the drug on the central nervous system, as performed by traditional antiemetic drugs, is excluded; consequently, the anti-nausea action of ginger seems to be due to its gastric activity (gastric prokinetic activity, block of the serotonergic receptors of the digestive tract, cholagogue activity).

Different studies, including randomized placebo-controlled clinical trials, have confirmed ginger's activity in the treatment of hyperemesis gravidarum without severe side effects for the woman or teratogenic effects on the fetus.<sup>8,9</sup>

The aim of this study is to evaluate the clinical effectiveness of a product in drops based on ginger [ginger rhizome d.e. 1% Gingerols (*Zingiber officinalis*) 262.5 mg] in the treatment of hyperemesis gravidarum.

## Materials and methods

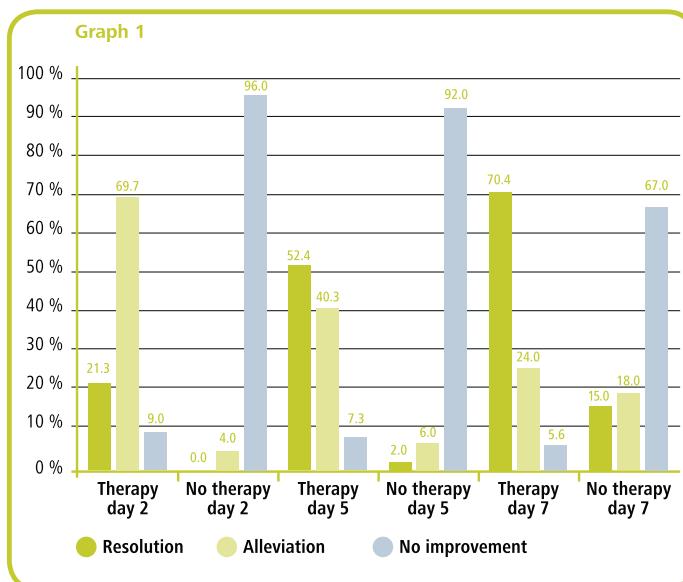
25 patients affected by hyperemesis gravidarum, aged 25-35 and between the 7<sup>th</sup> and the 11<sup>th</sup> week of pregnancy were selected; all the patients had proper dietary habits, a normal BMI and were not smokers. The patients took 25 drops of the product studied 3 times a day per 7 days. The intensity and frequency of nausea and vomiting were measured through the *Rhodex Index of nausea, Vomiting and Retching*; after 7 days, their clinical conditions were evaluated and compared to a group of women who did not undergo any treatment, for personal choice.

## Results

From the 2<sup>nd</sup> day of treatment, a statistically significant decrease in the symptoms was reported, compared with the control group: symptoms disappeared in 21.3% of patients and decreased in 69.7% of patients, whereas 9% of women did not experience any improvement. At the end of the 7<sup>th</sup> day of treatment, resolution of hyperemesis gravidarum was reported in 70.4% of patients (Tab.1-2, Graph 1).

Symptoms	2 <sup>nd</sup> Day	5 <sup>th</sup> Day	7 <sup>th</sup> Day
Resolution	21.3 %	52.4 %	70.4 %
Alleviation	69.7 %	40.3 %	24 %
No improvement	9 %	7.3 %	5.6 %

Symptoms	2 <sup>nd</sup> Day	5 <sup>th</sup> Day	7 <sup>th</sup> Day
Resolution	0 %	2 %	15 %
Alleviation	4 %	6 %	18 %
No improvement	96 %	92 %	67 %



## Conclusions

Nausea and vomiting in pregnancy are severe clinical conditions; if they are underestimated or not properly treated, they may influence its course. At the moment, recognized or certainly effective therapeutic remedies do not exist.

Ginger is well known from the ancient times for its remarkable antiemetic and anti-nausea activity, used both in traditional and alternative medicine and proposed for the treatment of pregnancy nausea and vomiting with good results.

Our study, despite being open and limited to a reduced number of cases, confirms the positive action of this product on hyperemesis gravidarum of the first trimester; the results stimulate further analysis and the search for new therapeutic remedies for this symptom.

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