inositoli

The true story of MYO and D-Chiro 40:1

Index

Introduction

Among the questions that most interest the scientific debate on inositols there is probably the one related to: ***"Myo-inositol, D-chiro-inositol or both for PCOS?"***

It is good that the answer to this question comes from science and clinical evidence. The different roles that myo and d-chiro-inositol play at physiological level tell us which the most suitable path is.

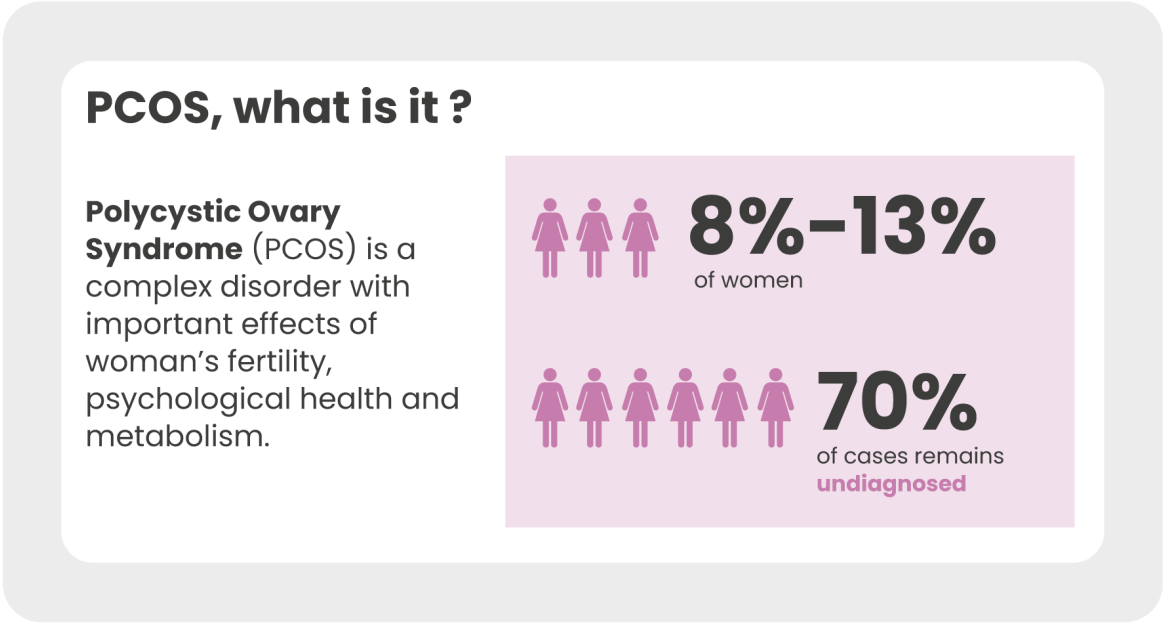
On this page, **we will talk about the true story of the scientific research on inositols and explain why and in which cases the combination of myo-inositol and d-chiro-inositol in the 40:1 ratio is the best choice for PCOS women.**

40:1 an arrival point

Along the history of the use of inositols in clinical practice, **the combined therapeutic formula of myo and d-chiro-inositol in the 40:1 ratio represents an important arrival point of a scientific research that takes its first steps already in the second half of the 1900,** when the attention of researchers focused more and more on inositols.

The role of inositol in the treatment of PCOS

In recent years, an increasing number of studies have focused on the ability of inositols, especially myo-inositol and D-chiro-inositol, **to improve ovulation and fertility of PCOS women.**



To learn more read: **Inositols and PCOS**

Clinical data have shown that myo and d-chiro have an insulin sensitizing effect. **There is therefore no doubt that both inositols perform essential functions for the body.**

So why 40:1? The answer is to be found not in the similarities, but in the differences between myo and d-chiro inositol.

Myo and d-chiro: comparison of inositols

Already in **1988**, the scientist **Larner first sensed that myo-inositol and D-chiro inositol were two different chemical mediators of insulin.**

Although very similar, **the functions of the two isomers are in fact different.**

Summing up:

- **myo-inositol** increases **the glucose cellular uptake** and is involved in the **FSH activity [1];**
- instead, **D-chiro-inositol** is crucial for the **glycogen synthesis** and participates in **the androgens production at ovarian level [1];**
- **D-chiro-inositol** is found in **high concentrations in the tissues that store glycogen**: fat, liver and muscles;
- instead, **myo-inositol** is greater in tissues that need energy: **heart, brain, ovaries and in follicular fluid in women, testicles and seminal fluid in men;**
- The physiological myo / D-chiro ratio and the relative quantities of each stereoisomer vary from tissue to tissue. In other words, **myo and D-chiro ratio is "tissue-specific".**

The myo and d-chiro ratio is "tissue-specific", thus reflecting the different physiological role of the two inositols [2] [3].

To learn more we recommend: **The difference between inositol, Myo-inositol and D-Chiro-inositol**

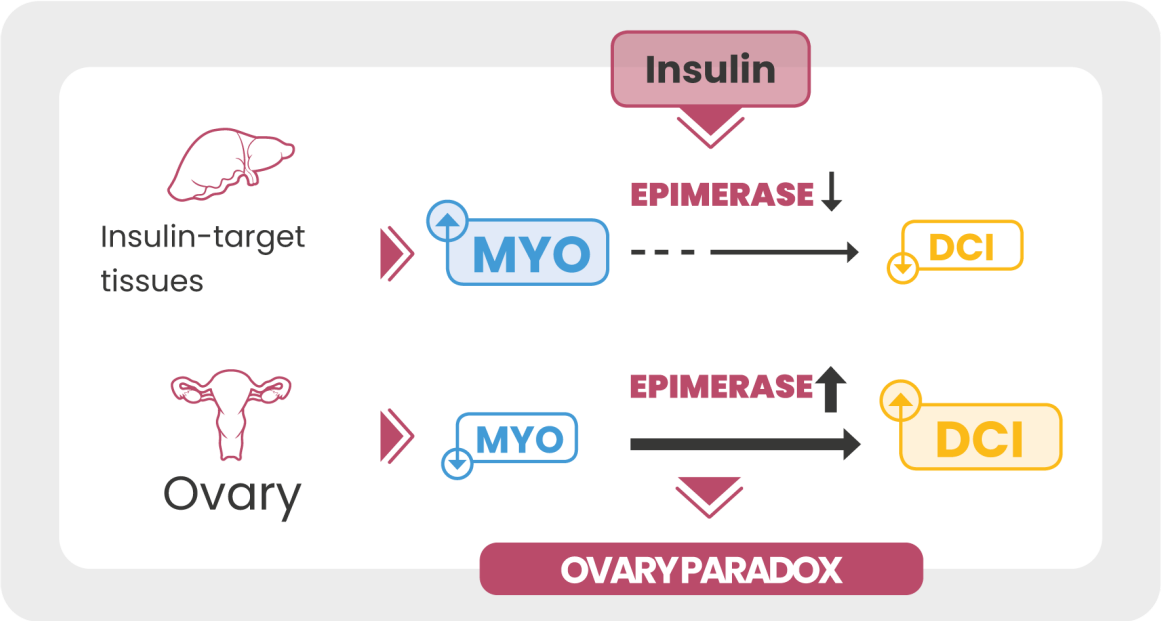
The ovarian paradox in PCOS

We said that in healthy women, **the follicular fluid is rich in myo-inositol.**

Scientific evidence has shown that **in PCOS women, on the other hand, the ovary is rich in d-chiro. How can you explain this imbalance?**

To answer this question, it is necessary to introduce the role of an enzyme, **epimerase**: this enzyme depends on the insulin hormone and is responsible for the conversion of myo-inositol into d-chiro-inositol.

In PCOS women, in hyperinsulinemia conditions, epimerase activity is accelerated, causing excessive conversion of myo into D-chiro [4].



Unlike the other organs, the ovary is never insulin resistant and, in PCOS woman, it becomes rich in d-chiro inositol. **Myo deficiency causes a negative effect on the FSH signal (follicle stimulating hormone) and on the oocyte quality [4].**

To learn more about the "d-chiro paradox in PCOS" also read: **D-chiro-inositol: what it is, use and benefits**

Myo and D-chiro 40:1: a question of balance

Starting from the intuition on the ovarian paradox, and the different roles that myo and d-chiro play, a group of Italian scientists focused the attention on the importance of a correct myo and D-chiro inositol supplementation, taking into account the need to restore the impairment by restoring the correct myo/d-chiro ratio at ovarian level too.

But which is the optimal dosage to take advantage of the d-chiro-inositol efficacy without compromising the ovarian functionality?

Considering the specific relationship between Myo and D-chiro inositol and the different physiological roles of both, the combined Myo and D-chiro oral therapy in the 40:1 ratio (the physiological ratio in the blood) has been proposed as an alternative and effective treatment for PCOS women [5].

Myo and D-chiro 40:1: the benefits on hyperandrogenism

The excess of androgens in PCOS can be explained through two mechanisms:

- insulin resistance;
- the impaired myo and D-chiro ratio in the ovary.

It is for this reason that **an increasing number of studies have focused on evaluating the combination of the two inositols as a treatment for PCOS**. Among the various MI/DCI ratios that have been tested, several studies concluded that **the combination of myo and D-chiro 40:1 seems to be the best choice to restore the endocrinological impairments in overweight or obese PCOS women (BMI> 25). [6].**

The combination of myo and D-chiro 40:1 seems to be the best choice to restore the endocrinological impairments in overweight or obese PCOS women 40:1

40:1 and the benefits on ovulation and fertility

The International Consesus Conference in Florence on the use of myo and D-chiro in obstetrics and gynecology **affirmed the beneficial effects of the 40:1 plasma ratio on the oocyte and ovarian quality** [7]. Colazingari also in his study [8] demonstrated the **advantages of the combined 40:1 ratio for oocyte quality compared to d-chiro inositol alone.**

40:1 and the benefits on the morphology of the polycystic ovary

In PCOS women, in addition to the excessive conversion of myo into D-chiro and the lack of myo in the follicles [1], **a positive correlation was also found between the volume of the follicular fluid, myo inositol and the presence of mature oocytes.**

The administration of **d-chiro-inositol alone, at high doses, has been shown to decrease oocyte quality and ovarian response** [9]. **On the contrary, the best results were obtained with the combination of Myo and d-chiro** [10].

A surprising study on a mouse model shows how the PCOS treatment with Myo D-chiro 40:1 has allowed the ovaries to return to their histological characteristics and to restore fertility [11].

40:1 and the metabolic benefits

Insulin resistance and the consequent compensatory hyperinsulinemia are frequent **dysfunctions in PCOS women**,

regardless of body weight, but with a prevalence in association with obesity.

This is a wake-up call for cardiovascular risk and the development of other serious diseases, including type 2 diabetes, hypertension and metabolic syndrome [12].

Studies have shown that Myo/D-chiro 40:1 therapy has improved LDL, HDL and TG (triglyceride) levels, while also reducing fasting and circulating insulin levels.

To learn more, read also: **Inositols, overweight and obesity**

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Other topics that may interest you

Myo-inositol

D-chiro-inositol

Alpha-lactalbumin

PCOS

Overweight