

Galactogogues and breastfeeding. 2015

Wilinska & Schleußner. *Nutrafoods* 14(3):119–125

Milk insufficiency is a problem perceived in about two-thirds of lactating women. Silymarin, extracted from milk thistle fruit (*Silybum marianum*), is a complex of four flavonolignans. Long used in traditional medicine for liver disease, data emerged that the silymarin complex also has galactogenic effects. This means it induces milk flow through a mechanism that is thought to involve the release of prolactin. Milk composition is not affected and the authors consider silymarin to be useful as breastfeeding support in healthy women [1].

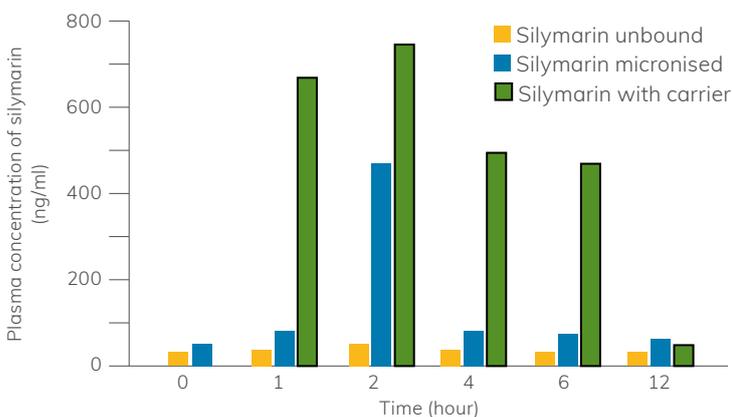
Background

The authors describe that many women struggle with perceived milk insufficiency. Mothers of preterm infants are additionally challenged with difficulty in lactation due to stress, prematurity of mammary tissue, their own health status, and medications.

In practice, some medications are being used off label or against recommendations whereas interest in plant extracts rise in an effort to avoid prescription drugs and potential side effects.

Plant extracts have been used for centuries in medical care yet their extraction methodology and low bioavailability have raised questions on their possible efficacy and safety.

The presented review investigates the few data available on silymarin, the active multi-component bio-complex extracted from milk thistle fruit, which has been used also as galactogogue in husbandry and humans.



Improved bioavailability of silymarin bound to phosphatidylserine. Plasma silymarin concentrations were measured over 12h after oral intake of 336 mg silybin (the active component in the silymarin complex) in three preparations. Unbound silymarin (yellow) served as control. Silymarin was micronised to improve bioavailability (blue) or coupled with the phospholipid carrier phosphatidylserine (green) [data from author file]. The graph shows that intestinal absorption was highest for the coupled silymarin preparation as reflected by plasma concentrations peaking within 2h after intake and lasting for 6h.

Data and discussion

Several studies in animals and humans are discussed and data from file or redrawn from [2] shown in figures 1 and 2 of the review. These data were used to evaluate possible functional mechanisms of the silymarin bio-complex, which is composed of four flavonolignans (silybin A and B, silychristin, silydianin, and isosilybin). Structurally, these compounds are bio-flavonoid phytoestrogens.

A critical deterrent for many herbal extracts is their poor bioavailability. The authors share their data from file (see figure below) and show that bioavailability of silymarin is increased when silymarin is linked to a lipid carrier. The lipid carrier increases the ability of the molecule to cross membranes (either by active or passive transport) which is reflected in higher plasma concentrations compared to controls.

A series of animal studies that the authors describe in detail indicates that the silymarin-carrier combination increases plasma prolactin concentrations in a dose-dependent manner that could be countered by bromocriptine. These results likely describe the mechanism by which silymarin induces milk flow.

Available small-size clinical studies were also discussed, showing an increase in milk volumes in mothers of term and preterm infants compared to placebo use. The authors propose silymarin as safe support for lactating women based on this observation, the lack of adverse events in these trials, and the missing indication for negative effects on milk composition.

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References

- [1] Wilinska M, Schleußner E. Galactogogues and breast-feeding. 2015 *Nutrafoods* 14:119-125. doi: 10.1007/s13749-015-0034-9
- [2] Capasso R. Effect of silitidil, a standardized extract of milk thistle, on the serum prolactin levels in female rats. 2014 *Nat Prod Commun* 9(7):943-944.