

Estrogen explains the exosome-carried messenger profile in the circulation among postmenopausal women

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A study at the Gerontology Research Center demonstrated that in blood circulation, the exosome-carried messenger molecule profile differs between post- and premenopausal women. The differences were associated with circulating estrogen and cholesterol levels as well as body composition and other health indicators. These findings enable using the studied molecules in the evaluation of health status.

"The studied [messenger molecules](#) are packed in the exosomes, which are released by the cells into the circulation. Exosomes are spherical nanoscale lipid vesicles. These small packages carry microRNA molecules, which are considered to be messengers between the cells regulating gene function," says Docent Eija Laakkonen.

The study was the first to show that specific exosome-packed microRNAs are sensitive to the [estrogen levels](#) in the circulation, which is influenced both by age and the use of hormonal therapies. The results can be exploited in evaluating the effects of hormonal contraceptives and hormone replacement therapies on the overall physiological status of women. When the regulatory mechanisms of the microRNAs are better understood, the microRNA profile can be used for recognizing individuals with a high risk for metabolic disorders, or even lowering the risk.

– "It seems, therefore, that the postmenopausal declining amount of circulating [estrogen](#) changes the cargo inside the exosomes. When these exosome packages are delivered to the target tissues, the contents are released to the correct recipient cell. These delivered messages change the function of the cell," explains doctoral candidate Reeta Kangas. "The next step would be to perform functional studies in order to see how estrogen regulates the exosome cargo and how

the message is further processed inside the recipient cell."

The study has been published in the esteemed *Scientific Reports* journal by Nature Publishing.

More information: Reeta Kangas et al. Aging and serum exomiR content in women-effects of estrogenic hormone replacement therapy, *Scientific Reports* (2017). [DOI: 10.1038/srep42702](https://doi.org/10.1038/srep42702)

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