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# Diagnostic and prognostic microRNAs in the serum of breast cancer patients measured by droplet digital PCR

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**Background:** Breast cancer circulating biomarkers include carcinoembryonic antigen and carbohydrate antigen 15–3, which are used for patient follow-up. Since sensitivity and specificity are low, novel and more useful biomarkers are needed. The presence of stable circulating microRNAs (miRNAs) in serum or plasma suggested a promising role for these tiny RNAs as cancer biomarkers. To acquire an absolute concentration of circulating miRNAs and reduce the impact of preanalytical and analytical variables, we used the droplet digital PCR (ddPCR) technique.

**Results:** We investigated a panel of five miRNAs in the sera of two independent cohorts of breast cancer patients and disease-free controls. The study showed that miR-148b-3p and miR-652-3p levels were significantly lower in the serum of breast cancer patients than that in controls in both cohorts. For these two miRNAs, the stratification of breast cancer patients versus controls was confirmed by receiver operating characteristic curve analyses. In addition, we showed that higher levels of serum miR-10b-5p were associated with clinicobiological markers of poor prognosis.

**Conclusions:** The study revealed the usefulness of the ddPCR approach for the quantification of circulating miRNAs. The use of the ddPCR quantitative approach revealed very good agreement between two independent cohorts in terms of comparable absolute miRNA concentrations and consistent trends of dysregulation in breast cancer patients versus controls. Overall, this study supports the use of the quantitative ddPCR approach for monitoring the absolute levels of diagnostic and prognostic tumor-specific circulating miRNAs.

## Biography

Sayda Omer Ebnaof has completed her PhD in Molecular Biology from University of Ferrara, Italy in 2016 and MSc in Molecular Medicine from Institute of Endemic Diseases, University of Khartoum-Sudan. She is a Lecturer of Histopathology and Cytology at University of Khartoum. She has published four papers in reputed journals.

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