

CURRENT RESEARCH TOPICS IN PHARMACY: *Pharmacology Debates*

April 19th, 2023 10.00 AM ISTANBUL

FOR REGISTRATION:



First Session- Moderator: Esra TATAR 10.00-11.30 AM

Welcome- Prof. Hatice Kübra Elçioğlu
Marmara University, Istanbul, Türkiye

The roles of cheminformatics in natural product-based drug discovery-Prof.Long Chiau Ming
School of Medical and Life Sciences, Sunway University, Kuala Lumpur, Malaysia

Applications of machine learning to the lead discovery: Practical approaches – Dr.Said Moshawih
Universiti Brunei Darussalam, Gadong, Brunei Darussalam

Second Session – Moderator: Ayşe Nur HAZAR YAVUZ 12:00-13.30 PM

Can Vitamin C supplements prevent premature rupture of membranes and preterm birth- Assist. Prof. Ana V. Pejčić
University of Kragujevac, Kragujevac, Serbia

Drugs affecting newborn weight, length and head circumference at birth -Assist.Prof. Milos N. Milosavljevic
University of Kragujevac, Kragujevac, Serbia

From traditional medicine to brain tumor therapy using Plectranthus diterpenes- Assoc.Prof. Patricia Rijo
Lusofona University, Lisbon, Portugal

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Third Session- Moderator: Mehmet GÜMÜŞTAŞ 14.00-15.30 PM

Side effects of COVID 19 vaccines and the contribution of graphenes- Assoc.Prof.Beril Anılanmert
Institute of Forensic Sciences and Legal Medicine, Istanbul University-Cerrahpaşa, Istanbul, Türkiye

Knowledge and behaviour of medical university students about drug store and use-Assist.Prof.Klodiola Dhano
Aldent University, Tirana, Albania

The advancement of herbal-based treatments for hair loss- Dr.Oğuzhan Aydemir
Istinye University, Istanbul, Türkiye

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CAN VITAMIN C SUPPLEMENTS PREVENT PREMATURE RUPTURE OF MEMBRANES AND PRETERM BIRTH?

Ana V. PEJČIĆ^{1*} , Nemanja Z. PETROVIĆ^{1,2} , Milan D. DJORDJIĆ³ ,
Miloš N. MILOSAVLJEVIĆ¹ 

¹Department of Pharmacology and Toxicology, Faculty of Medical Sciences,
University of Kragujevac, Kragujevac, Serbia

²Department of Clinical Pharmacology, University Clinical Center Kragujevac,
Kragujevac, Serbia

³Department of Communication Skills, Ethics and Psychology, Faculty of Medical
Sciences, University of Kragujevac, Kragujevac, Serbia

anapejic201502@yahoo.com

*Presenting and corresponding author

Vitamin C (ascorbic acid) is an essential water-soluble micronutrient involved in the antioxidant defense mechanisms and synthesis of collagen [1]. It has been suggested that vitamin C could be effective in preventing premature rupture of membranes (PROM) and preterm birth, but previous systematic reviews and meta-analyses had inconsistent results [1-4]. Some found that women supplemented with vitamin C had reduced risk of preterm PROM (PPROM) [1] and term PROM (TPROM) [1], while other found that vitamin C supplementation was not effective in reducing risk of PPRM [3, 4] or preterm birth [1, 3] or, conversely, that it was associated with an increased risk of preterm birth [2]. Considering previous inconsistencies, we aimed to conduct a systematic review and meta-analysis to determine if vitamin C supplements could be effective in preventing PROM or preterm birth. We registered our protocol in PROSPERO (CRD42022371644). PubMed/MEDLINE, Scopus and Web of Science were searched up to December 21, 2022. Backward and forward citation searching was also performed. We included randomized controlled clinical studies evaluating the efficacy of vitamin C supplementation alone in prevention of PROM or preterm birth in pregnant women in comparison with control group who received placebo or no vitamin C supplementation, and excluded studies in which information needed for calculation of combined effect sizes could not be extracted, calculated or obtained, studies with unavailable full text, conference abstracts, non-randomized clinical studies and studies in which efficacy of vitamin C in combination with other supplements was evaluated (if both groups received same supplements such study was not excluded). Cochrane Risk of Bias 2 (RoB 2) tool was used to assess risk of bias. Data analysis was performed using Meta-Essentials: Workbooks for meta-analysis (Version 1.5) [5]. Random effects model was used with inverse variance weighting method, while combined effects sizes were estimated

using risk ratio (RR) and considered significant only if both 95% confidence interval (CI) did not include 1 and $p < 0.05$. Four main outcomes were evaluated: PROM (regardless of being preterm or term), PPROM, TPROM and preterm birth. Cochran's Q test and I^2 statistic were used to evaluate statistical heterogeneity. In case of significant heterogeneity ($p < 0.10$ and $I^2 > 50\%$), subgroup and moderator analyses were used to explore potential sources of heterogeneity. Sensitivity analysis was carried out by excluding individual studies one at a time and recalculating the combined effect size estimates for the remaining studies. We planned to assess publication bias, but because of the small number of studies (less than 10) we did not. A total of 9 studies (10 reports) met eligibility criteria. Total daily dose of vitamin C supplementation varied from 100 to 1000 mg. The overall risk of bias according to RoB 2 tool was judged as "high" and "some concerns" for 4 (44.4%) and 5 (55.6%) of 9 studies, respectively. Vitamin C supplementation was associated with a significantly reduced risk of PROM (7 studies, 1590 participants, $RR = 0.57$, 95% CI from 0.39 to 0.81, $Z = -3.82$, $p < 0.001$, $Q = 6.83$, $p = 0.337$, $I^2 = 12.17\%$, robust in sensitivity analysis) and PPROM (4 studies, 457 participants, $RR = 0.67$, 95% CI from 0.45 to 0.99, $Z = -3.25$, $p = 0.001$, $Q = 1.27$, $p = 0.737$, $I^2 = 0.00\%$, not robust in sensitivity analysis) without significant between-study heterogeneity. No significant differences were seen between women supplemented with vitamin C and controls in risk of TPROM (3 studies, 397 participants, $RR = 0.44$, 95% CI from 0.13 to 1.49, $Z = -2.89$, $p = 0.004$, $Q = 2.29$, $p = 0.319$, $I^2 = 12.50\%$, robust in sensitivity analysis) without significant between-study heterogeneity and preterm birth (5 studies, 1643 participants, $RR = 0.94$, 95% CI from 0.57 to 1.55, $Z = -0.34$, $p = 0.730$, $Q = 8.02$, $p = 0.091$, $I^2 = 50.13\%$, robust in sensitivity analysis) but with significant between-study heterogeneity, so we explored its potential sources in subgroup and moderator analyses with available data. Subgroups of studies in Africa and continents other than Africa had an acceptable level of heterogeneity ($I^2 = 43.86\%$ and $I^2 = 0.00\%$, respectively) and combined effect sizes were not significant ($RR = 1.10$, 95% CI from 0.56 to 2.18 and $RR = 0.52$, 95% CI from 0.17 to 1.59, respectively). Also, subgroup of studies with high risk of bias was without any heterogeneity ($I^2 = 0.00\%$) and with nonsignificant combined effect size ($RR = 0.77$, 95% CI from 0.03 to 22.90). In conclusion, our results indicate that vitamin C supplementation could be effective in reducing risk of PROM and PPROM, but not TPROM and preterm birth. Considering that membrane rupture may be associated with increased oxidative stress and abnormalities in collagen formation and structure [6], vitamin C could be effective in preventing PROM and PPROM because of its antioxidant effects and role in the synthesis of collagen. However, the total number of studies included in some of the analyses was relatively small, so these results should be interpreted cautiously as some analyses could have been underpowered. Also, considering significant heterogeneity and lack of robustness in some of the analyses, additional high-quality studies with low risk of bias, larger and more homogenous samples are needed to confirm these findings.

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KEYWORDS: Vitamin C; premature rupture of membranes; preterm birth; prevention.

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