

## البحث الرابع

**Title:** Novel Integral Inequalities on Nabla Time Scales with C-Monotonic Functions

**Authors:** Mohammed Zakarya, A. I. Saied, Maha Ali, Haytham M. Rezk and **Mohammed R. Kenawy**

**Journal:** Symmetry

**Volume:** 15

**Issue:** 6

**Year:** 2023

**Pages:** 1248.

### **Journal information:**

- **Publisher:** MDPI.
- **ISSN:** 2073-8994
- **Impact factor (2023):** 2.2
- **Index in:** Web of Science – Q2

### **Article history:**

- **Received:** 20 April 2023
- **Accepted:** 5 June 2023
- **Published:** 12 June 2023

**Authors' contributions:** Investigation, Software and Writing-original draft, H.M.R., A.I.S. and M.R.K.; Supervision, Writing-review editing and Funding, H.M.R., M.A. and M.Z. All authors have read and agreed to the published version of the manuscript

**Is the research extracted from a scientific thesis? “No”**

**URL:** <https://doi.org/10.3390/sym15061248>

**DOI:** [10.3390/sym15061248](https://doi.org/10.3390/sym15061248)

**Abstract.** Through the paper, we present several inequalities involving C-monotonic functions with  $C \geq 1$ , on nabla calculus via time scales. It is known that dynamic inequalities generate many different inequalities in different calculus. The main results will be proved by applying the chain rule formula on nabla calculus. As a special case for our results, when  $\mathbb{T} = \mathbb{R}$ , we obtain the continuous analogues of inequalities that had previously been proved in the literature. When  $\mathbb{T} = \mathbb{N}$ , the results, to the best of the authors' knowledge, are essentially new. Symmetrical properties of C-monotonic functions are critical in determining the best way to solve inequalities.