Heat Stress Alters Amino Acid Metabolism in Dairy Cows: Plasma and Milk Metabolomics

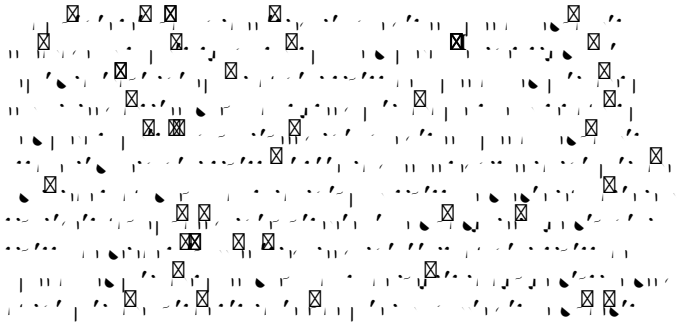
Ruiz González*

Department of Pharmacology, University of Nottingham, United Kingdom

Abstract

Heat stress poses a signiýcant challenge to dairy cattle, a ecting their overall health and productivity. This study investigates the impact of heat stress on amino acid metabolism in Holstein dairy cows using plasma and milk metabolomics. Twelve lactating Holstein cows were subjected to heat stress conditions, and plasma and milk samples were collected before and during heat stress exposure. Metabolomic analysis revealed signiýcant alterations in amino acid proýles in both plasma and milk samples under heat stress conditions. Several essential and non-essential amino acids exhibited changes in concentration, indicating disruptions in amino acid metabolism pathways. Speciýcally, increased levels of certain amino acids, such as glutamate and aspartate, were observed in plasma and milk samples during heat stress, suggesting enhanced protein catabolism and gluconeogenesis. These ýndings provide valuable insights into the metabolic response of dairy cows to heat stress and highlight the importance of amino acid metabolism in maintaining metabolic homeostasis during thermal stress. Understanding the mechanisms underlying these metabolic alterations may inform strategies for mitigating the negative e ects of heat stress on dairy cow health and productivity.

: Heat stress; Dairy cows; Amino acid metabolism; Metabolomics; Plasma; Milk



***Corresponding author:** Ruiz Gonz§lez, Department of Pharmacology, University of Nottingham, United Kingdom, E-mail: rg.ruiz@gonzalez.com

Received: 01-Feb-2024, Manuscript No. jomb-24-127844; **Editor assigned:** 03-Feb-2024, Pre QC No. jomb-24-127844 (PQ); **Reviewed:** 17-Feb-2024, QC No. jomb-24-127844, **Revised:** 23-Feb-2024, Manuscript No. jomb-24-127844 (R); **Published:** 17-Fe O' : 1O.4177 =˜ ʌ ʌ ƙ Ů ž—' '

Citation: Gonz§lez R (2024) Heat Stress Alters Amino Acid Metabolism in Dairy Cows: Plasma and Milk Metabolomics. J Obes Metab 7: 201.

signi cance threshold (e.g., $p < 0.05$). Discuss measures taken to ensure

7. Beynon C (2023) Association between children living with obesity and Mental Health problems: a data analysis from the Welsh Health Survey, UK. BMC Public Health 23: 383.

8. Khatri E, Baral K, Arjyal A, Yadav RK, Baral S, et al. (2023) Prevalence of and risk factors for overweight among ado] m M nldren living wit Ô !