Dietary supplementation with copper oxide nanoparticles ameliorates chronic heat stress in broiler chickens

Seham El-Kassas^{A,H}, Karima El-Naggar^B, Safaa E. Abdo^C, Walied Abdo^D, Abeer A. K. Kirrella^E, Ibrahim El-Mehaseeb^F and Mohammed Abu El-Magd^G

^AAnimal, Poultry and Fish Breeding and Production, Department of Animal Wealth Development, Faculty of Veterinary Medicine, Kafrelsheikh University, Post Box 33516, Egypt.

^BDepartment of Nutrition and Veterinary Clinical Nutrition, Faculty of Veterinary Medicine, Alexandria University, Post Box 22758, Egypt.

^cGenetics and Genetic Engineering, Department of Animal Wealth Development, Faculty of Veterinary Medicine, Kafrelsheikh University, Post Box 33516, Egypt.

^DDepartment of Pathology, Faculty of Veterinary Medicine, Kafrelsheikh University, Post Box 33516, Egypt.

^EPoultry Physiology, Poultry production Department, Faculty of Agriculture, Kafrelsheikh University.

^FNano-chemistry Laboratory, Chemistry Department, Faculty of Science, Kafrelsheikh University, Post Box 33516, Egypt.

^GDepartment of Anatomy, Faculty of Veterinary Medicine, Kafrelsheikh University, Post Box 33516, Egypt.

^HCorresponding author. Email: seham.elkassas@vet.kfs.edu.eg; seham.elkassas7@gmail.com

Fig. S1. Hemoglobin content (g/dL) (n = 6) of Cobb and Ross broiler exposed to different Cu sources under normal temperature and heat stress. The Results are expressed as mean ± s.e.m. *, ** and *** denote statistical significance with P < 0.05, P < 0.01 and P < 0.001, respectively.

