


RESEARCH ARTICLE

Ameliorative effect of Rutin on sodium fluoride-induced hypertension through modulation of Kim-1/NF- κ B/Nrf2 signaling pathway in rats

Ademola Adetokunbo Oyagbemi¹  | Temidayo Olutayo Omobowale² | Olufunke Eunice Ola-Davies¹ | Ebinoluwa Racheal Asenuga³ | Temitayo Olabisi Ajibade¹ | Olumuyiwa Abiola Adejumo² | Jeremiah Moyinoluwa Afolabi² | Blessing Seun Ogunpolu² | Olufunke Olubunmi Falayi⁴ | Fatimah Ayodeji¹ | Fasilat Oluwakemi Hassan¹ | Adebowale Bernard Saba⁴ | Adeolu Alex Adedapo⁴ | Momoh Audu Yakubu⁵

¹Faculty of Veterinary Medicine, Department of Veterinary Physiology and Biochemistry, University of Ibadan, Ibadan, Nigeria

²Faculty of Veterinary Medicine, Department of Veterinary Medicine, University of Ibadan, Ibadan, Nigeria

³Faculty of Veterinary Medicine, Department of Veterinary Physiology and Biochemistry, University of Benin, Benin City, Nigeria

⁴Faculty of Veterinary Medicine, Department of Veterinary Pharmacology and Toxicology, University of Ibadan, Ibadan, Nigeria

⁵Department of Environmental & Interdisciplinary Sciences, College of Science, Engineering & Technology, Vascular Biology Unit, Center for Cardiovascular Diseases, COPHS, Texas Southern University, Houston, Texas

Correspondence

Temidayo Olutayo Omobowale, Faculty of Veterinary Medicine, Department of Veterinary Medicine, University of Ibadan, Nigeria.
Email: bukitayo_omobowale@yahoo.com

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Abstract

Sodium fluoride is one of the neglected environmental contaminants. Inorganic fluorides in the environment are found in the air, water, and land. In the study, forty-male Wistar albino rats were randomly divided into four groups with 10 rats in a group. Group A was the control group which was given normal saline, Group B was exposed to 300 ppm of NaF in drinking water, while Groups C and D received NaF along Rutin (100 mg/kg and 200 mg/kg) orally daily for a week. Administration of NaF alone led to significant increases in blood pressure, and decreased serum nitric oxide. Immunohistochemistry revealed higher expressions of kidney injury molecule I (Kim-1), nuclear factor kappa beta (NF- κ B), and down regulation of nuclear factor erythroid 2-related factor 2 (Nrf2) in rats administered NaF. Rutin co-treatment with NaF normalized blood pressure, lowered Kim-1 and NF- κ B expressions, and improved nitric oxide bioavailability.

KEYWORDS

antioxidant, hypertension, oxidative stress, Rutin, sodium fluoride

1 | INTRODUCTION

Low levels of fluoride in plaque and saliva has been shown to inhibit the demineralization of enamel, enhance the remineralization of

demineralized enamel and also inhibit dental caries by disrupting the metabolic activity of cariogenic bacteria.¹ Other topical fluoride products, such as 0.2% sodium fluoride (NaF) mouth rinse (900 ppm) and brush-on gels/pastes (eg, 1.1% NaF; 5000 ppm) have also been