BRITISH PHARMACOLOGICAL SOCIETY

VOLUME 180 NUMBER S1 July 2023

BJP

British Journal of Pharmacology

Abstracts of the 19th World Congress of Basic & Clinical Pharmacology 2023

www.brjpharmacol.org
ISSN 0007-1188 ISSN 1476-5381

WILEY

BJP
British Journal of Pharmacology

The *British Journal of Pharmacology* is a broad-based journal giving leading international coverage of all aspects of experimental pharmacology. It publishes high quality original research and authoritative reviews. Each year a range of themed issues are published and a must-read supplement, the Concise Guide to Pharmacology is published biennially.

Conclusions

The n-3 PUFA-rich fish oil elicits a strain-specific action on sex hormone status and smooth muscle contractions in rat. The response to n-3 PUFA intake maybe significantly different within a given species. This might have importance both in animal feeding and human nutrition.

P0180 | Evaluation of acute toxicological profile of the selected natural clays in rats

Vesna Jaćević[1,2,3]; Milena Obradović[4]; Zoran Milovanović[5]; Ljiljana Amidžić[6,7]; Lana Nežić[8]; Milena Knežević[9]; Danina Krajišnik[10]; Aleksandra Daković[4]

[1]Department for Experimental Toxicology and Pharmacology, National Poison Control Centre, Military Medical Academy, Crnotravska 17, 11000, Belgrade, Serbia; [2]Medical Faculty of the Military Medical Academy, University of Defence, Crnotravska 17, 11000, Belgrade, Serbia; [3]Department of Chemistry, Faculty of Science, University of Hradec Kralove, Rokitanskeho 62, 500 03, Hradec Kralove, Czeck Republic; [4]Institute for Technology of Nuclear and Other Mineral Raw Materials, Franš d'Eperea 86, 11000, Belgrade, Serbia; [5]Special Police Unit, Ministry of Interior, Trebevićka 12/A, 11 030, Belgrade; [6]Center for Biomedical Research, Faculty of Medicine, University of Banja Luka, Save Mrkalja 14, 78000, Banja Luka, Bosnia and Herzegovina; [7]Department for Human Genetics, Faculty of Medicine, University of Banja Luka, Save Mrkalja 14, 78000, Banja Luka, Bosnia and Herzegovina; [8]Department of Pharmacology, Toxicology and Clinical Pharmacology, Faculty of Medicine, University of Banja Luka, Save Mrkalja 14, 78000, Banja Luka, Bosnia and Herzegovina; [9]Military Academy, University of Defence, Veljka Lukića Kurjaka 1, 11000, Belgrade, Serbia; [10]Department of Pharmaceutical Technology and Cosmetology, University of Belgrade – Faculty of Pharmacy, Vojvode Stepe 450, 11221, Belgrade, Serbia

Introduction

Natural bentonite (NBNT) and natural halloysite (NHAL), as clay minerals, are used in animal nutrition because their absorption/adsorption properties contribute significantly to animals' health [1]. Clay minerals have also emerged special attention as potential materials for biomedical applications, due to their favorable physicochemical and functional related characteristics along with good biocompatibility. Since it has been proved natural clays have their toxicological profiles, and that any modification can change this profile, we evaluated acute toxicology on selected materials.

Method

Two natural clays NBNT and NHAL were used for the acute toxicity study. This study was performed on adult male and female Wistar rats according to the procedures published earlier in the literature [2]. Increasing doses of each clay were applied by p.o. the route, in a separate group of rats (n = 5), both genders, as presented in Table 1. All animals were sacrificed on day 14th, and their guts samples were prepared for further standard histopathological analysis, as previously described [3].

Results

The LD50 value of NBNT was higher than 2000 mg/kg in male and female rats. Also, NHAL showed somewhat lower acute toxicity in male and female rats (LD50 > 3,000 (Table 2).

In the majority of gastric tissue samples in groups treated with the lower doses of each clay, histological findings were similar to those observed in the control rats. However, a small number of tissue sections in rats treated with two higher doses of NBNT and NHAL were shown mild, focal histological changes, such as discrete desquamation of superficial epithelial cells and less intensive mucous fluid. These histological alterations were the highest in animals sacrificed two weeks after administration of 1.0LD50 NBNT (GDS was 2.63 ± 0.96) (Table 3).

Conclusions

Our results can help to predict likely acute toxic effects, establishment risk categories or dose selection for the initial repeated dose toxicity tests to be conducted for each natural clay. Project Acronym: AniNutBiomedCLAYs.

TABLE 1 The selection of dose levels for acute toxicity study of natural bentonite (NBNT) and natural halloysite (NHAL) in rats.

Natural clay	Rats (male/female) (mg/kg p.o.)
NBNT	800
	1,600
	2,400
NHAL	1,000
	2000
	3,000

TABLE 2 The effects of natural bentonite (NBNT) and natural halloysite (NHAL) on 24 hours of survival in rats.

Treatments	Dose (mg/kg p.o.)	Total number dead/treated		LD_{50} (mg/kg p.o.)
		Male	Female	Male/Female
NBNT	800	0/5	0/5	> 2,400
	1,200	0/5	0/5	
	2,400	0/5	0/5	
NHAL	1,000	0/5	0/5	> 3,000
	2000	0/5	0/5	
	3,000	0/5	0/5	

TABLE 3 The influence of natural bentonite (NBNT) and natural halloysite (NHAL) in rats on the gastric injury (gut damage score, GDS) on day 14 following application.

Treatments	GDS (5 guts/group x 6 specimens/gut) ± S.D.		
	$0.3LD_{50}$	$0.5LD_{50}$	$1.0LD_{50}$
control	0.10 ± 0.31	0.10 ± 0.31	0.10 ± 0.31
NBNT	0.17 ± 0.38	2.33 ± 0.48 *	2.63 ± 0.96 *
NHAL	0.13 ± 0.35	1.43 ± 0.97 $^{*,\delta}$	2.00 ± 0.64 $^{*,\delta}$

*p < .001 vs control group; $^{\delta}$p < .05 vs NBNT-treated group.

References

1. Daković A, Kragović M, Rottinghaus GE, Ledoux DR, Butkeraitis P, Vojislavljević DZ, Zarić SD, Stamenić LJ (2012) Preparation and characterization of zinc-exchanged montmorillonite and its effectiveness as aflatoxin B1 adsorbent. Materials Chemistry and Physics 137(1):213–220.
2. Jaćević V, Nepovimova E, Kuča K (2019). Interspecies and intergender differences in acute toxicity of K-oximes drug candidates. Chemico-Biological Interactions 308:312–316.
3. Jaćević V, Nepovimova E, Kuča K (2019). Acute toxic injuries of rat's visceral tissues induced by different oximes. Scientific Reports 9:16425.

P0181 | Protocatechuic aldehyde attenuates ischaemia – induces injuries in rate models of brain ischaemia

Francis Fu Yuen Lam; Ethel Sau Kuen Ng; Johnny C. M. Koon; Clara B. S. Lau; Ping Chung Leung; Kwok Pui Fung
The Chinese University of Hong Kong

Introduction

Ischaemic stroke is one of the leading causes of death and disability worldwide. Recently, we have shown that a formulation of Danshen and Gegen (DG) has neuroprotective actions in rat brains [1]. In the present study, one of the major ingredients of DG, protocatechuic aldehyde (PA), was investigated for its efficacies and mechanisms of actions in attenuating ischaemia-induced injuries in two rat models of brain ischaemia.

Method

The actions of PA were investigated in an in vivo rat model of ischaemic stroke induced by middle cerebral artery occlusion (MCAO) and in an in vitro model induced by oxygen and glucose deprivation (OGD) in primary cultured rat embryonic cortical neurones, as described in our previous report [1].

Results

In the in vivo model, PA (0.3–1 g/kg, i.p.) produced dose-dependent reduction on MCAO-induced neurological deficit, cerebral oedema, and brain infarct ($n \geq 6$; $P < .05$). In the in vitro model, PA (1–100 μM) inhibited the release of lactate dehydrogenase (LDH) ($n \geq 8$; $P < .05$), the collapse of mitochondrial membrane potential (MMP) ($n = 8$; $P < .001$), the number of TUNEL positive cells ($n = 7$; $P < .001$), and caspase-3 activity (Table 1), and increased cell viability ($n \geq 8$; $P < .05$) in primary cultured rat cortical neuronal cells subjected to OGD. In both models, PA (1 g/kg and 100 μM, respectively) restored the levels of anti-oxidant enzymes (superoxide dismutase; SOD, catalase; CAT, and glutathione peroxide;