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MEETING ABSTRACTS

MEMANTINE AND ITS COMBINATION WITH ACETYLCHOLINESTERASE INHIBITORS IN PHARMACOLOGICAL PRETREATMENT OF SOMAN POISONING IN MICE

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The efficacy of prophylactic use of memantine alone or in combination with clinically used reversible acetylcholinesterase inhibitors (pyridostigmine, donepezil, or rivastigmine) against soman toxicity and their influence on post-exposure therapy consisting of atropine and HI-6 was studied. The effectiveness was assessed by comparison of LD_{50} values over 24 h after soman poisoning. Pyridostigmine failed to decrease the acute toxicity of soman. But memantine, donepezil and rivastigmine reduced the acute toxicity of soman, with donepezil showing the best efficacy. Combination of memantine with pyridostigmine or one of the centrally-acting reversible acetylcholinesterase inhibitors attenuated soman acute toxicity significantly. The pharmacological pretreatment influenced the efficacy of post-exposure treatment in a similar fashion; i) pyridostigmine or memantine did not affect the therapeutic effectiveness of antidotal treatment ii) centrally acting reversible acetylcholinesterase inhibitors slightly increased the efficacy of antidotal treatment, iii) combination of memantine with reversible acetylcholinesterase inhibitors increased the effectiveness of antidotal treatment more markedly. In conclusion, memantine alone slightly decrease the acute toxicity of soman and failed to increase post-exposure antidotal treatment efficacy. On the other hand, the combination of memantine with donepezil significantly decrease the acute toxicity of soman and increased post-exposure effectiveness. Both drugs, when applied together, mitigate soman toxicity and boost post-exposure treatment.

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Keywords: soman; memantine; pyridostigmine; donepezil; rivastigmine