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Impact of Oleoresin Capsicum Spray on Respiratory Function in Human Subjects in the Sitting and Prone Maximal Restraint Positions in San Diego County, 1998

Theodore C. Chan, Gary M. Vilke, Jack Clausen, Richard Clark, Paul Schmidt, Thomas Snowden, and Tom Neuman

ICPSR 2961

User Guide and Codebooks

Inter-university Consortium for Political and Social Research

IMPACT OF OLEORESIN CAPSICUM SPRAY ON RESPIRATORY FUNCTION IN HUMAN SUBJECTS IN THE SITTING AND PRONE MAXIMAL RESTRAINT POSITIONS IN SAN DIEGO COUNTY, 1998

(ICPSR 2961)

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REQUEST FOR INFORMATION ON USE OF ICPSR RESOURCES

To provide funding agencies with essential information about use of archival resources and to facilitate the exchange of information about ICPSR participants' research activities, users of ICPSR data are requested to send to ICPSR bibliographic citations for each completed manuscript or thesis abstract. Please indicate in a cover letter which data were used.

DATA DISCLAIMER

The original collector of the data, ICPSR, and the relevant funding agency bear no responsibility for uses of this collection or for interpretations or inferences based upon such uses.

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SUMMARY

Oleoresin capsicum (OC), or pepper spray, has gained wide acceptance as standard police equipment in law enforcement as a swift and effective method to subdue violent, dangerous suspects in the field. As a use-of-force method, however, OC spray has been alleged in the media to have been associated with a number of in-custody deaths. The goal of this study was to assess the safety of a commercially available OC spray in use by law enforcement agencies nationwide. The study was conducted as a randomized, cross-over, controlled trial on volunteer human subjects recruited from the local law enforcement training academy in San Diego County, California. Subjects participated in four different experimental trials in random order over two separate days in a pulmonary function testing laboratory: (a) placebo spray exposure followed by sitting position, (b) placebo spray exposure followed by restraint position, (c) OC spray exposure followed by sitting position, and (d) OC spray exposure followed by restraint position. Prior to participation, subjects completed a short questionnaire regarding their health status, history of lung disease and asthma, smoking history, medication use, and respiratory inhaler medication use. Prior to exposure, subjects also underwent a brief screening spirometry in the sitting position by means of a portable spirometry device to determine baseline pulmonary function. Subjects then placed their heads in a 5' x 3' x 3' exposure box that allowed their faces to be exposed to the spray. A one-second spray was delivered into the box from the end opposite the subject (approximately five feet away). Subjects remained in the box for five seconds after the spray was delivered. During this time, subjects underwent impedance monitoring to assess whether inhalation of the OC or placebo spray had occurred. After this exposure period, subjects were placed in either the sitting or prone maximal restraint position. Subjects remained in these positions for ten minutes. Repeat spirometric measurements were performed; oxygen saturation, blood pressure, end-tidal carbon dioxide levels, and pulse rate were recorded; and an arterial blood sample was drawn. A total of 34 subjects completed the study, comprising 128 separate analyzable study trials. Variables provided in all three parts of this collection include subject's age, gender, ethnicity, height, weight, body mass index, past medical history, tobacco use history, and history of medication use, as well as OC spray or placebo exposure and sitting or restraint position during the trial. Part 1 also includes tidal volume, respiratory rate, and heart rate at baseline and at 1, 5, 7, and 9 minutes; and systolic and diastolic blood pressure at baseline and at 3, 6, and 9 minutes. Additional variables in Part 2 include predicted forced vital capacity and predicted forced expiratory volume in 1 second, and the same measures at baseline, 1.5 minutes, and 10 minutes. Derived variables include percent predicted and mean percent predicted values involving the above variables. Part 3 also provides end-tidal carbon dioxide and oxygenation levels; oxygen saturation; oxygen consumption at baseline and at 1, 5, 7, and 9 minutes; blood pH; partial pressure of oxygen; and partial pressure of carbon dioxide at 8 minutes.

GENERAL STUDY OVERVIEW

STUDY IDENTIFICATION

IMPACT OF OLEORESIN CAPSICUM SPRAY ON RESPIRATORY FUNCTION IN HUMAN SUBJECTS IN THE SITTING AND PRONE MAXIMAL RESTRAINT POSITIONS IN SAN DIEGO COUNTY, 1998

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University of California. San Diego School of Medicine and Medical Center, and the San Diego Regional Public Safety Training Institute

Award No. 98-IJ-CX-0079

KEY WORDS

law enforcement, oleoresin capsicum spray, police equipment, use of force

PURPOSE OF THE STUDY

Oleoresin capsicum (OC), or pepper spray, has gained wide acceptance as standard police equipment in law enforcement as a swift and effective method to subdue violent, dangerous suspects in the field. Derived from the extract of the capsicum pepper plant, OC spray causes inflammation and edema over areas of contact (primarily the face, eyes, nose, and mouth), resulting in pain and discomfort such that many suspects lose their capacity to resist. With widespread use, however, OC spray as a use-of-force method has been alleged in the media to have been associated with a number of in-custody deaths. Because symptoms of coughing, gagging, and shortness of breath are common with OC exposure, concern has focused on the respiratory effects of OC spray as playing a potential role in these deaths. Moreover, individuals subdued with OC spray in the field often require physical restraint, including the prone maximal restraint or hobble position. Some have argued that OC in combination with restraint can lead to significant respiratory compromise and risk for asphyxiation and death. While capsaicin, the active ingredient of OC, has been studied extensively in the medical literature for its ability to induce coughing, few studies on the physiologic effects of OC on humans have been conducted, particularly relating to respiratory

function. In addition, no prior studies have been done on the effects of OC in combination with positional restraint. The goal of this study was to assess the safety of a commercially available OC spray in use by law enforcement agencies nationwide. Specifically, the researchers examined both OC spray and positional restraint in human subjects to determine if OC exposure by itself or in combination with positional restraint resulted in clinically significant respiratory compromise as measured by pulmonary function testing and assessment of oxygenation and ventilation. Additionally, they sought to determine if OC spray by itself or in combination with positional restraint resulted in any hemodynamic compromise as measured by pulse rate and blood pressure, whether body size and weight influenced the effects of OC spray in regard to respiratory and pulmonary function, and whether pulmonary disease (such as asthma), the use of respiratory inhaler medications, or history of smoking tobacco influenced the effects of OC spray in regard to respiratory and pulmonary function, with both of the latter two measured by pulmonary function testing and assessment of oxygenation and ventilation.

METHODS

STUDY DESIGN

The study was conducted as a randomized, cross-over, controlled trial on volunteer human subjects recruited from the local law enforcement training academy in San Diego County, California. Subjects participated in four different experimental trials in random order over two separate days in a pulmonary function testing laboratory: (a) placebo spray exposure followed by sitting position, (b) placebo spray exposure followed by sitting position, (c) OC spray exposure followed by sitting position, and (d) OC spray exposure followed by restraint position. Prior to participation, subjects completed a short questionnaire regarding their health status, history of lung disease and asthma, smoking history, medication use, and respiratory inhaler medication use. Prior to exposure, subjects also underwent a brief screening spirometry in the sitting position by means of a portable spirometry device to determine baseline pulmonary function. Subjects then placed their heads in a 5' x 3' x 3' exposure box that allowed their faces to be exposed to the spray. A one-second spray was delivered into the box from the end opposite the subject (approximately five feet away). Subjects remained in the box for five seconds after the spray was delivered. During this time, subjects underwent impedance monitoring to assess whether inhalation of the OC or placebo spray had occurred. After this exposure period, subjects were placed in either the sitting or prone maximal restraint position. Subjects remained in these positions for ten minutes. Repeat

spirometric measurements were performed at 1.5 and 10 minutes. Oxygen saturation, end-tidal carbon dioxide levels, and pulse rate were recorded at 1, 5, and 9 minutes. Blood pressure was recorded at 3, 6, and 9 minutes. An arterial blood sample was drawn at 8 minutes. After the 10-minute period, the subject had a one-hour rest and wash-out period to allow for resolution of any residual effects from either exposure or position. After this rest period, the subject performed a second experiment trial. The subject performed only two trials on each experiment day. Though the sequence of trials was randomized, no subject received two exposures to OC in a single day. A total of 34 subjects completed the study, comprising 128 separate analyzable study trials. Eight trials were excluded because the subjects did not inhale adequately when exposed to OC spray.

SOURCES OF INFORMATION

Data were obtained from experimental clinical trials involving four trials per human subject over two separate days.

SAMPLE

Thirty-seven volunteers were recruited from the training staff and cadets of the San Diego Regional Public Safety Training Institute. Demographic data were collected on the subjects' age, weight, height, and race. The subjects' weight and height were used to calculate body mass index (BMI). These data were used to stratify subjects as overweight. Additional data were collected on medical history, presence of lung disease (including asthma), smoking history, medication use, and respiratory inhaler medication use. These data were used to stratify subjects into those with potential respiratory abnormalities (asthma or lung disease history, tobacco history, and inhaler medication use) and those without. No exclusion was made on the basis of race, ethnicity, age, obesity, or history of pulmonary disease such as asthma. Two subjects were excluded prior to the start of the study due to physical injuries and one subject was excluded after an adverse reaction during his first trial. Of the 136 separate trials completed by the remaining 34 subjects, eight trials were excluded because the subjects did not inhale adequately when exposed to OC spray. For the spirometric and pulmonary function testing data, an additional four trials were excluded as testing did not meet American Thoracic Society criteria for reproducibility and variability. For the arterial blood gas data, two trials were excluded because venous rather than arterial blood was sampled. For the blood pressure data, one trial was excluded due to mechanical instrument error.

DATE(S) OF DATA COLLECTION

1998

SUMMARY OF CONTENTS

DESCRIPTION OF VARIABLES

Variables provided in all three parts of this collection include subject's age, gender, ethnicity, height, weight, body mass index, past medical history, tobacco use history, and history of medication use, as well as OC spray or placebo exposure and sitting or restraint position during the trial. Part 1 also includes tidal volume, respiratory rate, and heart rate at baseline and at 1, 5, 7, and 9 minutes; and systolic and diastolic blood pressure at baseline and at 3, 6, and 9 minutes. Additional variables in Part 2 include predicted forced vital capacity and predicted forced expiratory volume in 1 second, and the same measures at baseline, 1.5 minutes, and 10 minutes. Derived variables include percent predicted and mean percent predicted values involving the above variables. Part 3 also provides end-tidal carbon dioxide and oxygenation levels; oxygen saturation; oxygen consumption at baseline and at 1, 5, 7, and 9 minutes; blood pH; partial pressure of oxygen; and partial pressure of carbon dioxide at 8 minutes.

PRESENCE OF COMMON SCALES

None.

UNIT OF OBSERVATION

The experimental trial.

EXTENT OF PROCESSING

ICPSR converted hardcopy documentation to machine-readable form and reformatted the data and documentation. ICPSR also performed checks for undocumented codes, standardized missing data codes, created a codebook, and generated SAS and SPSS data definition statements for this collection.

EXTENT OF COLLECTION

The data collection contains three data files with a user guide and codebooks in a PDF file, and SAS and SPSS data definition statements.

DATA COLLECTION NOTES

(1) This study was a joint effort of the San Diego Regional Public Safety Training Institute, as part of the San Diego City Police and San Diego County Sheriff's departments, and the Department of Emergency Medicine (and its Division of Medical Toxicology) and Department of Internal Medicine (and its Division of Pulmonary and Critical Care Medicine) at the University of California, San Diego Medical Center. (2) Users are encouraged to obtain a copy of the project's final report for a more complete description of the trial study procedures. (3) The user guide and codebooks are provided by ICPSR as a Portable Document Format (PDF) file. The PDF file format was developed by Adobe Systems Incorporated and can be accessed using PDF reader software, such as the Adobe Acrobat Reader. Information on how to obtain a copy of the Acrobat Reader is provided on the ICPSR Web site.

FILE SPECIFICATIONS

PART NUMBER: 1
PART NAME: Vital Statistics Data
FILE STRUCTURE: rectangular
CASE COUNT: 128
VARIABLE COUNT: 41
RECORD LENGTH: 130
RECORDS PER CASE: 1

PART NUMBER: 2
PART NAME: Spirometric and Pulmonary Function Testing Data
FILE STRUCTURE: rectangular
CASE COUNT: 128
VARIABLE COUNT: 41
RECORD LENGTH: 195
RECORDS PER CASE: 1

PART NUMBER: 3
PART NAME: Arterial Blood Gas Data
FILE STRUCTURE: rectangular
CASE COUNT: 128
VARIABLE COUNT: 37
RECORD LENGTH: 120
RECORDS PER CASE: 1

RELATED PUBLICATION

Chan, Theodore C., Gary M. Vilke, Jack Clausen, Richard Clark, Paul Schmidt, Thomas Snowden, and Tom Neuman. "The Impact of Oleoresin Capsicum Spray on Respiratory Function in Human Subjects in the Sitting and Prone Maximal Restraint Positions" (Final Report). NCJ 182433. Washington, DC: United States Department of Justice. National Institute of Justice, 2000.

FINAL REPORTS AND OTHER PUBLICATIONS

The National Criminal Justice Reference Service (NCJRS) was established in 1972 by the National Institute of Justice (NIJ), of the U.S. Department of Justice, to provide research findings to criminal justice professionals and researchers. NCJRS operates specialized clearinghouses that are staffed by information specialists who supply a range of reference, referral, and distribution services. Final reports and other publications describing research conducted on a variety of criminal justice topics are available. Publications can be obtained from NCJRS at NIJ/NCJRS, Box 6000, Rockville, MD, 20849-6000, 800-851-3420 or 301-519-5500. TTY Service for the Hearing Impaired is 877-712-9279 (toll-free) or 301-947-8374 (local). The URL for the NCJRS homepage is:

http://www.ncjrs.org

DATA RESOURCES PROGRAM ON THE INTERNET

The National Institute of Justice Data Resources Program (DRP) makes datasets from NIJ-funded research and evaluation projects available to the research community and sponsors research and training activities devoted to secondary data analysis. Datasets are archived by the National Archive of Criminal Justice Data (NACJD) at the Inter-university Consortium for Political and Social Research (ICPSR) at the University of Michigan.

The NACJD maintains a World Wide Web site with instructions for transferring files and sending messages. Criminal justice data funded by the Department of Justice are available via the Internet at this site at no charge to the user. NACJD may be contacted at NACJD/ICPSR, P.O. Box 1248, Ann Arbor, MI, 48106-1248, 800-999-0960 or 734-998-9825. The URL for the NACJD homepage is:

http://www.icpsr.umich.edu/NACJD

DATA COMPLETENESS REPORT

This report corresponds to the data file: DA2961.P1

Table 1: Distribution of Variables by Percentage of Missing Values*

Variable Name and Label (Total cases=128)	Percent of Cases with Missing Values
75.6% (31 of 41 variables) have 0% Missing Values	
22.0% (9 of 41 variables) have > 0% - 1% Missing Values	
0.0% (0 of 41 variables) have > 1% - 3% Missing Values	
0.0% (0 of 41 variables) have > 3% - 5% Missing Values	
0.0% (0 of 41 variables) have > 5% - 10% Missing Values	
0.0% (0 of 41 variables) have > 10% - 20% Missing Values	
0.0% (0 of 41 variables) have > 20% - 40% Missing Values	
2.4% (1 of 41 variables) have > 40% - 100% Missing Values	
NOTES NOTES	93.8%

*Variables individually listed only if greater than 5% missing values. Data does not contain skip patterns or skip patterns are not reflected in the data as coded.

DATA COMPLETENESS REPORT

This report corresponds to the data file: DA2961.P2

Table 2: Distribution of Variables by Percentage of Missing Values*

Variable Name and Label (Total cases=128)	Percent of Cases with Missing Values
39.0% (16 of 41 variables) have 0% Missing Values	
0.0% (0 of 41 variables) have > 0% - 1% Missing Values	
51.2% (21 of 41 variables) have > 1% - 3% Missing Values	
7.3% (3 of 41 variables) have > 3% - 5% Missing Values	
0.0% (0 of 41 variables) have > 5% - 10% Missing Values	
0.0% (0 of 41 variables) have > 10% - 20% Missing Values	
0.0% (0 of 41 variables) have > 20% - 40% Missing Values	
2.4% (1 of 41 variables) have > 40% - 100% Missing Values	
NOTES NOTES	89.1%

*Variables individually listed only if greater than 5% missing values. Data does not contain skip patterns or skip patterns are not reflected in the data as coded.

DATA COMPLETENESS REPORT

This report corresponds to the data file: DA2961.P3

Table 3: Distribution of Variables by Percentage of Missing Values*

Variable Name and Label (Total cases=128)	Percent of Cases with Missing Values
62.2% (23 of 37 variables) have 0% Missing Values	
24.3% (9 of 37 variables) have > 0% - 1% Missing Values	
10.8% (4 of 37 variables) have > 1% - 3% Missing Values	
0.0% (0 of 37 variables) have > 3% - 5% Missing Values	
0.0% (0 of 37 variables) have > 5% - 10% Missing Values	
0.0% (0 of 37 variables) have > 10% - 20% Missing Values	
0.0% (0 of 37 variables) have > 20% - 40% Missing Values	
2.7% (1 of 37 variables) have > 40% - 100% Missing Values	
NOTES NOTES	78.9%

*Variables individually listed only if greater than 5% missing values. Data does not contain skip patterns or skip patterns are not reflected in the data as coded.

*** ICPSR CODEBOOK NOTES ***

(1) ICPSR recoded system missing to a 9-series code, labeled the code as "Unknown," and declared it as a missing value.

(2) Data were provided in MS Excel files. Where possible, the variable names were derived from the column headings in the Excel file. However, since neither SAS nor SPSS statistical packages allow variable names to begin with a number or percent sign, some column headings were modified to produce variable names that are valid with these software packages. In these instances, the column heading was retained as the initial part of the variable label. Column headings consisting of a cell reference were assigned a variable name based on content.

(3) Values for the trial number in Part 1 vary slightly from those in Parts 2 and 3. The principal investigator explained that the difference is due to elimination of breath holds.

CODEBOOK FOR ICPSR 2961

IMPACT OF OLEORESIN CAPSICUM SPRAY ON RESPIRATORY FUNCTION IN HUMAN SUBJECTS IN THE SITTING AND PRONE MAXIMAL RESTRAINT POSITIONS IN SAN DIEGO COUNTY, 1998

(PART 1: VITAL STATISTICS DATA)

PLEASE NOTE: The "M" between the code and the code label indicates the code has been designated as a missing value.

NAME	VARIABLE LABEL	BEG COL	END COL	FMT
SUBJ	SUBJECT NUMBER	1	2	F2
AGE	AGE OF SUBJECT	3	4	F2
SEX	GENDER OF SUBJECT	5	5	F1
	1 Male			
	2 Female			
ETH	ETHNICITY OF SUBJECT	6	6	F1
	1 White			
	2 Black			
	3 Hispanic			
	4 Asian			
	5 Other			
HT	SUBJECT'S HEIGHT (IN METERS)	7	11	F5.3
WT	SUBJECT'S WEIGHT (IN KILOGRAMS)	12	17	F6.2
BMI	BODY MASS INDEX (KG/M2)	18	23	F6.3
PMH	PAST MEDICAL HISTORY	24	24	F1
	0 No			
	1 Nonpulmonary medical Hx			
	2 Pulmonary medical Hx			
TOB	TOBACCO USE HISTORY	25	25	F1
	0 No Hx			
	1 Past Hx			
	2 Current tobbaco use			
MED	HISTORY OF MEDICATION USE	26	26	F1
	0 No			
	1 Non-inhaler medication			
	2 Inhaler medication			

NAME	VARIABLE LABEL	BEG COL	END COL	FMT
TRIALNO	TRIAL NUMBER	27	27	F1
EXP	EXPOSURE	28	28	F1
	0 Placebo 1 OC spray			
POS	POSITION	29	29	F1
	0 Sitting position 1 Restraint position			
BTV	BASELINE TIDAL VOLUME	30	33	F4
BRR	BASELINE RESPIRATORY RATE	34	35	F2
BHR	BASELINE HEART RATE	36	37	F2
TV_1	1TV:TIDAL VOLUME (1 MIN)	38	41	F4
	9999 M Unknown			
RR_1	1RR:RESPIRATORY RATE (1 MIN)	42	43	F2
	99 M Unknown			
HR_1	1HR:HEART RATE (1 MIN)	44	46	F3
	999 M Unknown			
TV_5	5TV:TIDAL VOLUME (5 MIN)	47	50	F4
	9999 M Unknown			
RR_5	5RR:RESPIRATORY RATE (5 MIN)	51	53	F3
	999 M Unknown			
HR_5	5HR:HEART RATE (5 MIN)	54	55	F2
	99 M Unknown			
TV_7	7TV:TIDAL VOLUME (7 MIN)	56	59	F4
RR_7	7RR:RESPIRATORY RATE (7 MIN)	60	61	F2

NAME	VARIABLE LABEL	BEG COL	END COL	FMT
HR_7	7HR:HEART RATE (7 MIN)	62	63	F2
TV_9	9TV:TIDAL VOLUME (9 MIN)	64	67	F4
RR_9	9RR:RESPIRATORY RATE (9 MIN)	68	69	F2
HR_9	9HR:HEART RATE (9 MIN)	70	72	F3
BSBP	BASELINE SYSTOLIC BLOOD PRESSURE	73	75	F3
BDBP	BASELINE DIASTOLIC BLOOD PRESSURE	76	78	F3
BMAP	BASELINE MEAN ARTERIAL PRESSURE	79	84	F6.2
SBP_3	3SBP:SYSTOLIC BLOOD PRESSURE (3 MIN)	85	87	F3
DBP_3	3DBP:DIASTOLIC BLOOD PRESSURE (3 MIN)	88	90	F3
MAP_3	3MAP:MEAN ARTERIAL PRESSURE (3 MIN)	91	96	F6.2
SBP_6	6SBP:SYSTOLIC BLOOD PRESSURE (6 MIN)	97	99	F3
DBP_6	6DBP:DIASTOLIC BLOOD PRESSURE (6 MIN)	100	102	F3
MAP_6	6MAP:MEAN ARTERIAL PRESSURE (6 MIN)	103	108	F6.2
SBP_9	9SBP:SYSTOLIC BLOOD PRESSURE (9 MIN)	109	111	F3
	999 M Unknown			
DBP_9	9DBP:DIASTOLIC BLOOD PRESSURE (9 MIN)	112	114	F3
	999 M Unknown			
MAP_9	9MAP:MEAN ARTERIAL PRESSURE (9 MIN)	115	120	F6.2
	999.99 M Unknown			
NOTES	NOTES	121	130	A10

CODEBOOK FOR ICPSR 2961

IMPACT OF OLEORESIN CAPSICUM SPRAY ON RESPIRATORY FUNCTION IN HUMAN SUBJECTS IN THE SITTING AND PRONE MAXIMAL RESTRAINT POSITIONS IN SAN DIEGO COUNTY, 1998

(PART 2: SPIROMETRIC AND PULMONARY FUNCTION TESTING DATA)

PLEASE NOTE: The "M" between the code and the code label indicates the code has been designated as a missing value.

NAME	VARIABLE LABEL	BEG COL	END COL	FMT
SUBJ	SUBJECT NUMBER	1	2	F2
AGE	AGE OF SUBJECT	3	4	F2
SEX	GENDER OF SUBJECT	5	5	F1
	1 Male			
	2 Female			
ETH	ETHNICITY OF SUBJECT	6	6	F1
	1 White			
	2 Black			
	3 Hispanic			
	4 Asian			
	5 Other			
HT	SUBJECT'S HEIGHT (IN METERS)	7	11	F5.3
WT	SUBJECT'S WEIGHT (IN KILOGRAMS)	12	17	F6.2
BMI	BODY MASS INDEX (KG/M2)	18	23	F6.3
PMH	PAST MEDICAL HISTORY	24	24	F1
	0 No			
	1 Nonpulmonary medical Hx			
	2 Pulmonary medical Hx			
TOB	TOBACCO USE HISTORY	25	25	F1
	0 No Hx			
	1 Past Hx			
	2 Current tobbaco use			
MED	HISTORY OF MEDICATION USE	26	26	F1
	0 No			
	1 Non-inhaler medication			
	2 Inhaler medication			

NAME	VARIABLE LABEL	BEG COL	END COL	FMT
TRIALNO	TRIAL NUMBER	27	27	F1
EXP	EXPOSURE	28	28	F1
	0 Placebo 1 OC spray			
POS	POSITION	29	29	F1
	0 Sitting position 1 Restraint position			
PFVC	PREDICTED FORCED VITAL CAPACITY	30	33	F4.2
PFEV1	PREDICTED FORCED EXPIRATORY VOLUME IN 1 SEC	34	37	F4.2
PFEV25	PREDICTED FORCED EXPIRATORY VOLUME (25-75%)	38	41	F4.2
BFVC	BASELINE FORCED VITAL CAPACITY	42	45	F4.2
	9.99 M Unknown			
BFEV1	BASELINE FORCED EXPIRATORY VOLUME IN 1 SEC	46	49	F4.2
	9.99 M Unknown			
BFEV25	BASELINE FORCED EXPIRATORY VOLUME (25-75%)	50	53	F4.2
	9.99 M Unknown			
FVC_1	1FVC:FORCED VITAL CAPACITY (1.5 MIN)	54	57	F4.2
	9.99 M Unknown			
FEV1_1	1FEV1:FORCEED EXPIRATORY VOLUME IN 1 SEC (1.5 MIN)	58	61	F4.2
	9.99 M Unknown			
FEV25_1	1FEV25:FORCED EXPIRATORY VOLUME (25-75%)(1.5 MIN)	62	65	F4.2
	9.99 M Unknown			
FVC_10	10FVC:FORCED VITAL CAPACITY (10 MIN)	66	69	F4.2
	9.99 M Unknown			

NAME	VARIABLE LABEL	BEG COL	END COL	FMT
FEV1_10	10FEV1:FORCED EXPIRATORY VOLUME IN 1 SEC (10 MIN)	70	73	F4.2
	9.99 M Unknown			
FEV25_10	10FEV25:FORCED EXPIRATORY VOLUME (25-75%)(10 MIN)	74	77	F4.2
	9.99 M Unknown			
BFVC_P	%BFVC: BFVC / PFVC	78	83	F6.2
	999.99 M Unknown			
BFE1_P	%BFE1: BFEV1 / PFEV1	84	90	F7.3
	999.999 M Unknown			
BFE2_P	%BFE2: BFEV25 / PFEV25	91	97	F7.3
	999.999 M Unknown			
FVC_1P	%1FVC: 1FVC / PFVC	98	104	F7.3
	999.999 M Unknown			
DFVC_P	%1FVC - %BFVC	105	111	F7.3
	99.999 M Unknown			
FE1_1P	%1FE1: 1FEV1 - PFEV1	112	118	F7.3
	999.999 M Unknown			
DFE1_1P	%1FE1 - %BFE1	119	125	F7.3
	99.999 M Unknown			
FE25_1P	%1FE25: 1FEV25 / PFEV25	126	131	F6.2
	999.99 M Unknown			
DFE25_1P	%1FE25 - %BFE2	132	138	F7.3
	99.999 M Unknown			
FVC_10P	%10FVC: 10FVC / PFVC	139	145	F7.3
	999.999 M Unknown			

NAME	VARIABLE LABEL	BEG COL	END COL	FMT
DFVC_10P	%10FVC - %BFVC	146	152	F7.3
	99.999 M Unknown			
FE1_10P	%10FE1: 10FEV1 / PFEV1	153	159	F7.3
	999.999 M Unknown			
DFE1_10P	%10FE1 - %BFE1	160	166	F7.3
	99.999 M Unknown			
FE2_10P	%10FE2: 10FVC25 / PFEV25	167	173	F7.3
	999.999 M Unknown			
DFE2_10P	%10FE2 - %BFE2	174	180	F7.3
	99.999 M Unknown			
NOTES	NOTES	181	195	A15

CODEBOOK FOR ICPSR 2961

IMPACT OF OLEORESIN CAPSICUM SPRAY ON RESPIRATORY FUNCTION IN HUMAN SUBJECTS IN THE SITTING AND PRONE MAXIMAL RESTRAINT POSITIONS IN SAN DIEGO COUNTY, 1998

(PART 3: ARTERIAL BLOOD GAS DATA)

PLEASE NOTE: The "M" between the code and the code label indicates the code has been designated as a missing value.

NAME	VARIABLE LABEL	BEG COL	END COL	FMT
SUBJ	SUBJECT NUMBER	1	2	F2
AGE	AGE OF SUBJECT	3	4	F2
SEX	GENDER OF SUBJECT	5	5	F1
	1 Male			
	2 Female			
ETH	ETHNICITY OF SUBJECT	6	6	F1
	1 White			
	2 Black			
	3 Hispanic			
	4 Asian			
	5 Other			
HT	SUBJECT'S HEIGHT (IN METERS)	7	13	F7.3
WT	SUBJECT'S WEIGHT (IN KILOGRAMS)	14	19	F6.2
BMI	BODY MASS INDEX (WT/HT2)	20	25	F6.3
PMH	PAST MEDICAL HISTORY	26	26	F1
	0 No			
	1 Nonpulmonary medical Hx			
	2 Pulmonary medical Hx			
TOB	TOBACCO USE HISTORY	27	27	F1
	0 No Hx			
	1 Past Hx			
	2 Current tobbaco use			
MED	HISTORY OF MEDICATION USE	28	28	F1
	0 No			
	1 Non-inhaler medication			
	2 Inhaler medication			

NAME	VARIABLE LABEL	BEG COL	END COL	FMT
TRIALNO	TRIAL NUMBER	29	29	F1
EXP	EXPOSURE	30	30	F1
	0 Placebo 1 OC spray			
POS	POSITION	31	31	F1
	0 Sitting position 1 Restraint position			
BETCO2	BETCO2:BASELINE END-TIDAL CO2 LEVEL	32	33	F2
BETO2	BETO2:BASELINE END-TIDAL OXYGENATION	34	36	F3
BSPO2	BSPO2:BASELINE OXYGEN SATURATION	37	39	F3
	999 M Unknown			
BVO2	BVO2:BASELINE OXYGEN CONSUMPTION	40	42	F3
ETCO2_1	1ETCO2:END-TIDAL CO2 LEVEL (1 MIN)	43	44	F2
	99 M Unknown			
ETO2_1	1ETO2:END-TIDAL OXYGENATION(1 MIN)	45	47	F3
	999 M Unknown			
SPO2_1	1SPO2:OXYGEN SATURATION (1 MIN)	48	50	F3
	999 M Unknown			
VO2_1	1VO2:OXYGEN CONSUMPTION (1 MIN)	51	54	F4
	9999 M Unknown			
ETCO2_5	5ETCO2:END-TIDAL CO2 LEVEL (5 MIN)	55	56	F2
	99 M Unknown			
ETO2_5	5ETO2:END-TIDAL OXYGENATION(5 MIN)	57	60	F4
	9999 M Unknown			

NAME	VARIABLE LABEL	BEG COL	END COL	FMT
SPO2_5	5SPO2:OXYGEN SATURATION (5 MIN)	61	63	F3
	999 M Unknown			
VO2_5	5VO2:OXYGEN CONSUMPTION (5 MIN)	64	66	F3
	999 M Unknown			
ETCO2_7	7ETCO2:END-TIDAL CO2 LEVEL (7 MIN)	67	68	F2
ETO2_7	7ETO2:END-TIDAL OXYGENATION(7 MIN)	69	71	F3
SPO2_7	7SPO2:OXYGEN SATURATION (7 MIN)	72	74	F3
VO2_7	7VO2:OXYGEN CONSUMPTION (7 MIN)	75	77	F3
PH_8	8PH:BLOOD PH AT 8 MINUTES	78	82	F5.3
	9.999 M Unknown			
PO2_8	8PO2:PARTIAL PRESSURE OF OXYGEN (8 MIN)	83	85	F3
	999 M Unknown			
PCO2_8	8PCO2:PARTIAL PRESSURE OF CO2 (8 MIN)	86	90	F5.2
	99.99 M Unknown			
ETCO2_9	9ETCO2:END-TIDAL CO2 LEVEL (9 MIN)	91	92	F2
ETO2_9	9ETO2:END-TIDAL OXYGENATION (9 MIN)	93	95	F3
SPO2_9	9SPO2:OXYGEN SATURATION (9 MIN)	96	98	F3
	999 M Unknown			
VO2_9	9VO2:OXYGEN CONSUMPTION (9 MIN)	99	101	F3
NOTES	NOTES	102	120	A19

APPENDIX A

Trial Study Procedure

Time	Procedure
Baseline/Preparation	Trial exposure (OC or Placebo) and position (Sitting or Restraint) determined. Baseline Pulmonary Function Testing (FVC and FEV1) performed. Continuous monitoring devices placed on Subject. Baseline oxygen saturation, end-tidal CO2, heart rate and blood pressure recorded.
0 time	Subject placed in Hood/Exposure Box 1 second of OC or placebo spray delivered into box. Impedance monitoring assesses inspiration/expiration
5 seconds	Subject removed from Hood/Exposure Box Subject placed in position (Sitting or Restraint).
1 minute	Oxygen saturation, end-tidal CO2 level and heart rate recorded.
1.5 minutes	Pulmonary Function Testing (FVC and FEV1) performed.
3 minutes	Blood Pressure recorded.
5 minutes	Oxygen saturation, end-tidal CO2 level and heart rate recorded.
6 minutes	Blood Pressure recorded.
8 minutes	Arterial blood gas sample drawn from radial artery at wrist. pH, pCO2, and pO2 levels determined.
9 minutes	Oxygen saturation, end-tidal CO2 level and heart rate recorded. Blood Pressure recorded.
10 minutes	Pulmonary Function Testing (FVC and FEV1) performed.
Trial Completed	Subject released from position. Residual exposure (OC or placebo) washed off. Subject allowed to rest a minimum of 1 hour.