The Strange Case of Mole Airlines Flight 1023

Information: At 6:02 AM, a team of medical examiners is called to the scene of a plane crash. The plane shows evidence of a midair explosion. The site of the explosion has a compound with the following analysis: 37.01% Carbon, 2.22% Hydrogen, 18.5% Nitrogen, and 42.2% Oxygen. The victims are found scattered around the crash site and must be identified by substances found in their personal affects or their bodies. Dental records are unavailable. One passenger was murdered and death occurred 1 hour before the plane crashed.

	Analysis of Compound (%)				
Victim #	Carbon	Hydrogen	Nitrogen	Oxygen	Location
1	67.31	6.98	4.62	21.10	blood & pockets
2	63.15	5.3		31.55	face
	46.66	4.48	31.10	17.76	stomach
3	72.15	7.08	4.68	16.03	pockets(200 tablets)
4	15.87	2.22	18.15	63.41	blood & pockets
5	75.42	6.63	8.38	9.57	blood
	37.01	2.22	18.5	42.27	pockets
6	57.14	6.16	9.52	27.18	pockets
7	80.48	7.45	9.39	2.68	pockets
	81.58	8.90	9.52		pockets
8	60.00	4.48		35.53	pocket
	63.56	6.00	9.27	21.17	pocket

Possible Compounds:

Identity	Formula	Notes
Codeine	$C_{18}H_{21}NO_3$	Painkiller/prescription/controlled
Cocaine	$C_{17}H_{21}NO_4$	Narcotic, illegal
Aspirin	$C_9H_8O_4$	painkiller
Aspartame	$C_{14}H_{18}N_2O_5$	artificial sweetener
Vanilla	$C_8H_8O_3$	flavoring
Trinitrotoluene	$C_7H_5N_3O_6$	explosive
Nitroglycerine	$C_3H_5N_3O_9$	explosive, heart medication
Curare	$C_{40}H_{44}N_4O$	poison
Thiobromine	$C_7H_8N_4O_2$	chocolate flavoring
Strychnine	$C_{21}H_{22}N_2O_2$	rat poison
Dimetacrine	$C_{10}H_{13}N$ (empirical formula)	Prescription Drug, antidepressant
Acetaminophen	$C_8H_9NO_2$	painkiller (Tylenol™)

Flight List of Passengers and Crew:

Amadeo Oldere	pilot with heart condition
Connie Majors	pharmacist
Jim LeClaire	baker
Archie Starr	teacher addicted to sugar-free drinks
Bob (Reno) Henderson	pro athlete suspended for drug violation
Lisa Jo	environmental engineer, severely depressed
Bill (Cadillac) Jackson	suspected drug dealer
Norm Anderson	suspected leader of a terrorist organization

The team's directive is to

1. Use the % composition data to determine formulas and identities for the compounds found on the victims. The number of significant figures in the analysis must be used to determine the number of significant figures to be used from the periodic table.
2. Use the personal data to determine the probable identification of each victim.
3. Determine who was murdered and who was the most probable murderer?

Victim #	Most Probable Identity
1	_____
2	_____
3	_____
4	_____
5	_____
6	_____
7	_____
8	_____

Murder Victim: _____

Murderer: _____

Certified by _____ _____

Student name printed Student Signature

Date: _____ Medical Examiner's Office _____Shift