USING SENECIO LYRATIPARTITUS AS A HAND DISINFECTANT AFTER ANAL ABLUTION

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Diarrhea

- Project is based on how to control diarrhea
- Diarrhea is responsible for over 1.8 m deaths worldwide annually
- 2 billion cases of diarrhea every year

Major causes of diarrhea

- Presence of enterogenic pathogens in food
- Water

Sources of Food and Water Contamination

Contamination takes place through:

- Surface running water picking fecal material
- Overflowing latrines spilling water
- Flies landing on stool and depositing pathogens on food and food serving objects
- Handling residual stool after defecation

i. Toilet paper usage
ii. Leaves, other cellulosic materials
iii. Anal ablution

Means by which Anal Ablution Infect Humans

- Anal ablution is the major culprit
- Bare hands come in direct contact with stool
- Small quantities of water are used
- Very little hand washing afterwards

Picture of latrine with ablution water

Table of countries which practice anal ablution and diarrhea deaths

WORLD REGION	ESTIMATES OF DEATHS	% OF WORLD TOTAL	TOTAL POPULATION (IN MILLION)
Africa	760,037	40	1,070
Americas (Including Western Europe)	63,403	3	962
Eastern Mediterranean	567,111	25	273
South East Asia	681,457	26	1,585
Western Pacific	125,644	6	644

Preventive measures after anal ablution

- Use of hand disinfectants
- Alcohol based disinfectants
- Synthetic benzylalkylamommonium salts
- *Senecio lyratus(lyratipartitus)*

Zone of inhibition in mm (± SE) of 500 mg/ml of various extracts of Senecio lyratus(lyratipartitus) and control drugs, and selected biocides against selected bacteria

Organisms / Antimicrobials	*Escherichia coli*	*Salmonella* sp.	*Enterobacter* Sp.	*Klebsiella sp.*
Senecio lyratus Methanol Extract	17 ± 0.40	19 ± 0.58	16 ± 1.15	15 ± 0.57
Senecio lyratus Ethyl Acetate Extract	16 ± 0.37	17 ± 0.29	14 ± 0.59	14 ± 0.52
Senecio lyratus Hexane Extract	15 ± 0.20	17 ± 0.36	14 ± 0.65	14 ± 0.39
Senecio lyratus Chloroform Extract	17 ± 0.49	20 ± 0.52	19 ± 0.55	18 ± 0.90
Senecio lyratus Butanol Extract	11 ± 0.51	12 ± 0.41	13 ± 0.35	11 ± 0.36
Senecio lyratus Aqueous Extract	7 ± 0.36	12 ± 0.98	8 ± 0.89	12 ± 0.62
Benzyldimethylhexadecylammonium chloride	20 ± 0.41	19 ± 0.49	18 ± 0.36	17 ± 0.24
Benzyldimethylhexylammonium chloride	22 ± 0.44	18 ± 0.69	20 ± 0.57	19 ± 0.32
Gentamycin	34 ± 1.35	32 ± 0.47	33 ± 1.39	31 ± 1.08
Chloramphenicol	34 ± 0.40	33 ± 1.19	34 ± 0.40	32 ± 1.15

Minimum Inhibitory Concentration (MIC) in mg/mL of various extracts of Senecio lyratus (lyratipartitus) and antimicrobial agents against selected bacteria

Organisms Antimicrobials	Escherichia coli	Salmonella sp.	Enterobacter sp.	Klebsiella sp.
Senecio lyratus Methanol Extract	15.63	1.95	1.95	31.25
Senecio lyratus Ethyl Acetate Extract	15.63	1.95	15.63	15.63
Senecio lyratus Hexane Extract	3.91	15.63	15.63	3.91
Senecio lyratus Chloroform Extract	1.95	1.95	1.95	1.95
Senecio lyratus Butanol Extract	15.63	7.81	15.63	15.63
Senecio lyratus Aqueous Extract	62.5	31.25	62.5	31.25
Benzyldimethylhexadecylammonium chloride	0.98	0.98	0.98	0.98
Benzyldimethylhexylammonium chloride	0.98	0.98	0.98	0.98
Chloramphenicol	7 µg/mL	7 µg/mL	7µg/mL	7 µg/mL
Gentamicin	20 µg/mL	20µ/mL	20 µg/mL	20 µ/mL

Picture of *Senecio lyratus(lyratipartitus)*

The Senela Hand Sanitizer