

Supplementary Materials S1. Search strategy

CINAHL plus with full text EBSCOhost

24.08.2022

No	Search	No of articles
#1	TI (cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinal* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol) OR AB (cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinal* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol)	23,125
#2	(MM "Cannabis+") OR (MM "Cannabinoids+") OR (MM "Cannabidiol") OR (MM "Hemp")	7,380
#3	(MM "Medical Marijuana")	1,648
#4	#1 OR #2 OR #3	23,850
#5	TI (Antibacterial* OR anti-bacterial* OR "anti bacterial*" OR antimicrobial* OR anti-microbial* OR "anti microbial*" OR "group A streptococcus" OR "streptococcus pyogenes" OR "s. pyogenes" OR "anti streptococc*" OR antistreptococc* OR anti-streptococc* OR "Staphylococcus aureus" OR "s. aureus" OR "staph aureus" OR "anti staphylococc*" OR antistaphylococc* OR anti-staphylococc* OR MRSA OR anti-MRSA OR VRSA OR anti-VRSA) OR AB (Antibacterial* OR anti-bacterial* OR "anti bacterial*" OR antimicrobial* OR anti-microbial* OR "anti microbial*" OR "group A streptococcus" OR "streptococcus pyogenes" OR "s. pyogenes" OR "anti streptococc*" OR antistreptococc* OR anti-streptococc* OR "Staphylococcus aureus" OR "s. aureus" OR "staph aureus" OR "anti staphylococc*" OR antistaphylococc* OR anti-staphylococc* OR MRSA OR anti-MRSA OR VRSA OR anti-VRSA)	45,537
#6	(MM "Staphylococcus Aureus+") OR (MM "Methicillin-Resistant Staphylococcus Aureus") OR (MM "Vancomycin-Resistant Staphylococcus Aureus")	6,681
#7	#5 OR #6	46,239
#8	#4 AND #7	25

TI: title; MH: exact subject heading; MM: exact major subject heading; AB: abstract.

Cochrane library

24.08.2022

No	Search	No of articles
#1	(cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinal* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol)ti,ab,kw	5,774
#2	MeSH descriptor: [Cannabis] explode all trees	381
#3	MeSH descriptor: [Medical Marijuana] explode all trees	26
#4	MeSH descriptor: [Cannabinoids] explode all trees	992
#5	#1 OR #2 OR #3 OR #4	5,774
#6	(Antibacterial* OR anti-bacterial* OR anti NEXT bacterial* OR antimicrobial* OR anti-microbial* OR anti NEXT microbial* OR group NEXT A NEXT streptococcus OR streptococcus NEXT pyogenes OR s. NEXT pyogenes OR anti NEXT streptococc* OR antistreptococc* OR anti-streptococc* OR Staphylococcus NEXT aureus OR s. NEXT aureus OR staph NEXT aureus OR anti NEXT staphylococc* OR antistaphylococc* OR anti-staphylococc* OR MRSA OR anti-MRSA OR VRSA OR anti-VRSA) ti,ab,kw	24,134
#7	MeSH descriptor: [Streptococcus pyogenes] explode all trees	275
#8	MeSH descriptor: [Staphylococcus aureus] explode all trees	870
#9	#6 OR #7 OR #8	24,134
#10	#5 AND #9	8
		All were trials

ti,ab,kw: title, abstract and key words

Medline via EBSCOhost

24.08.2022 1.24pm

No	Search	No of articles
#1	TI (cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinal* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol) OR AB (cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinal* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol)	62,947
#2	(MM "Cannabis") OR (MM "Medical Marijuana")	10,739
#3	(MM "Cannabinoids+") OR (MM "Cannabidiol") OR (MM "Dronabinol") OR (MM "Cannabinal")	12,927
#4	#1 OR #2 OR #3	65,163
#5	TI (Antibacterial* OR anti-bacterial* OR "anti bacterial*" OR antimicrobial* OR anti-microbial* OR "anti microbial*" OR "group A streptococcus" OR "streptococcus pyogenes" OR "s. pyogenes" OR "anti streptococc*" OR antistreptococc* OR anti-streptococc* OR "Staphylococcus aureus" OR "s. aureus" OR "staph aureus" OR "anti staphylococc*" OR antistaphylococc* OR anti-staphylococc* OR MRSA OR anti-MRSA OR VRSA OR anti-VRSA) OR AB (Antibacterial* OR anti-bacterial* OR "anti bacterial*" OR antimicrobial* OR anti-microbial* OR "anti microbial*" OR "group A streptococcus" OR "streptococcus pyogenes" OR "s. pyogenes" OR "anti streptococc*" OR antistreptococc* OR anti-streptococc* OR "Staphylococcus aureus" OR "s. aureus" OR "staph aureus" OR "anti staphylococc*" OR antistaphylococc* OR anti-staphylococc* OR MRSA OR anti-MRSA OR VRSA OR anti-VRSA)	367,593
#6	(MM "Streptococcus pyogenes")	9,649

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#7	(MM "Staphylococcus aureus+") OR (MM "Vancomycin-Resistant Staphylococcus aureus") OR (MM "Methicillin-Resistant Staphylococcus aureus")	50,624
#8	#5 OR #6 OR #7	376,239
#9	#4 AND #8	300

Tl: title, AB: abstract, MM: exact major subject heading, +: explode

Scopus

24.08.2022

No	Search	No of articles
#1	(TITLE-ABS-KEY (cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinol* OR cannabitriol* OR tetrahydrocannabin* OR thc OR dronabinol) AND TITLE-ABS-KEY (antibacterial* OR anti-bacterial* OR "anti bacterial*" OR antimicrobial* OR anti-microbial* OR "anti microbial*" OR "group A streptococcus" OR "streptococcus pyogenes" OR "s. pyogenes" OR "anti streptococcus" OR antistreptococc* OR anti-streptococc* OR "Staphylococcus aureus" OR "s. aureus" OR "staph aureus" OR "anti staphylococc*" OR antistaphylococc* OR anti-staphylococc* OR mrsa OR anti-mrsa OR vrsa OR anti-vrsa))	917

Latin America and Caribbean health Sciences Literature

<http://bases.bireme.br/cgi-bin/wxislind.exe/iah/online/?IsisScript=iah/iah.xis&base=LILACS&lang=p&form=A>

24.08.2022

Each number responsible for different search

No	Search	No of articles
#1	cannabis OR hemp OR marijuana OR phytocannabinoid\$ OR cannabinoid\$ OR cannabichromene\$ OR cannabicyclol\$ OR cannabidiol\$ OR cbd OR cannabielsoin\$ OR cannabigerol\$ OR cannabinodiol\$ OR cannabinol\$ OR cannabitriol\$ OR tetrahydrocannabin\$ OR thc OR dronabinol [Words] and antibacterial\$ OR anti-bacterial\$ OR antimicrobial\$ OR anti-microbial\$ OR antistreptococc\$ OR antistaphylococc\$ OR anti-staphylococc\$ OR MRSA anti-MRSA OR VISA OR anti-VISA [Words]	6 Hand searching 1
#2	cannabis OR hemp OR marijuana OR phytocannabinoid\$ OR cannabinoid\$ OR cannabichromene\$ OR cannabicyclol\$ OR cannabidiol\$ OR cbd OR cannabielsoin\$ OR cannabigerol\$ OR cannabinodiol\$ OR cannabinol\$ OR cannabitriol\$ OR tetrahydrocannabin\$ OR thc OR dronabinol [Words] and anti bacterial\$ [Words]	3 Hand searching 0
#3	cannabis OR hemp OR marijuana OR phytocannabinoid\$ OR cannabinoid\$ OR cannabichromene\$ OR cannabicyclol\$ OR cannabidiol\$ OR cbd OR cannabielsoin\$ OR cannabigerol\$ OR cannabinodiol\$ OR cannabinol\$ OR cannabitriol\$ OR tetrahydrocannabin\$ OR thc OR dronabinol [Words] and anti microbial\$ [Words]	1 Hand searching 0
#4	cannabis OR hemp OR marijuana OR phytocannabinoid\$ OR cannabinoid\$ OR cannabichromene\$ OR cannabicyclol\$ OR cannabidiol\$ OR cbd OR cannabielsoin\$ OR cannabigerol\$ OR cannabinodiol\$ OR cannabinol\$ OR cannabitriol\$ OR tetrahydrocannabin\$ OR thc OR dronabinol [Words] and streptococcus [Words]	1 Hand searching 0
#5	cannabis OR hemp OR marijuana OR phytocannabinoid\$ OR cannabinoid\$ OR cannabichromene\$ OR cannabicyclol\$ OR cannabidiol\$ OR cbd OR cannabielsoin\$ OR cannabigerol\$ OR cannabinodiol\$ OR cannabinol\$ OR cannabitriol\$ OR tetrahydrocannabin\$ OR thc OR dronabinol [Words] and streptococcus pyogenes [Words]	0
#6	cannabis OR hemp OR marijuana OR phytocannabinoid\$ OR cannabinoid\$ OR cannabichromene\$ OR cannabicyclol\$ OR cannabidiol\$ OR cbd OR cannabielsoin\$ OR cannabigerol\$ OR cannabinodiol\$ OR cannabinol\$ OR cannabitriol\$ OR tetrahydrocannabin\$ OR thc OR dronabinol [Words] and s. pyogenes [Words]	0
#7	cannabis OR hemp OR marijuana OR phytocannabinoid\$ OR cannabinoid\$ OR cannabichromene\$ OR cannabicyclol\$ OR cannabidiol\$ OR cbd OR cannabielsoin\$ OR cannabigerol\$ OR cannabinodiol\$ OR cannabinol\$ OR cannabitriol\$ OR tetrahydrocannabin\$ OR thc OR dronabinol [Words] and streptococcal [Words]	0
#8	cannabis OR hemp OR marijuana OR phytocannabinoid\$ OR cannabinoid\$ OR cannabichromene\$ OR cannabicyclol\$ OR cannabidiol\$ OR cbd OR cannabielsoin\$ OR cannabigerol\$ OR cannabinodiol\$ OR cannabinol\$ OR cannabitriol\$ OR tetrahydrocannabin\$ OR thc OR dronabinol [Words] and Staphylococcus [Words]	0
#9	cannabis OR hemp OR marijuana OR phytocannabinoid\$ OR cannabinoid\$ OR cannabichromene\$ OR cannabicyclol\$ OR cannabidiol\$ OR cbd OR cannabielsoin\$ OR cannabigerol\$ OR cannabinodiol\$ OR cannabinol\$ OR cannabitriol\$ OR tetrahydrocannabin\$ OR thc OR dronabinol [Words] and s. aureus [Words]	0
#10	cannabis OR hemp OR marijuana OR phytocannabinoid\$ OR cannabinoid\$ OR cannabichromene\$ OR cannabicyclol\$ OR cannabidiol\$ OR cbd OR cannabielsoin\$ OR cannabigerol\$ OR cannabinodiol\$ OR cannabinol\$ OR cannabitriol\$ OR tetrahydrocannabin\$ OR thc OR dronabinol [Words] and staph aureus [Words]	0
#11	cannabis OR hemp OR marijuana OR phytocannabinoid\$ OR cannabinoid\$ OR cannabichromene\$ OR cannabicyclol\$ OR cannabidiol\$ OR cbd OR cannabielsoin\$ OR cannabigerol\$ OR cannabinodiol\$ OR cannabinol\$ OR cannabitriol\$ OR tetrahydrocannabin\$ OR thc OR dronabinol [Words] and staphylococcal [Words]	0

Web of Science

24.08.2022

Each number responsible for different search

No	Search	No of articles
#1	cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinol* OR cannabitriol* OR tetrahydrocannabin* OR thc OR dronabinol (Topic) and Antibacterial* OR anti-bacterial* OR antimicrobial* OR antimicrobial* OR antistreptococc* OR anti-streptococc* OR antistaphylococc* OR anti-staphylococc* OR MRSA anti-MRSA	887 (export1)

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	OR VRSA OR anti-VRSA (Topic)	
#2	(TS=(cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinol* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol)) AND TS=(anti bacterial*)	579 (export2)
#3	(TS=(cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinol* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol)) AND TS=(anti microbial*)	214 (export3)
#4	(TS=(cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinol* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol)) AND TS=(group A streptococcus)	14 (export4)
#5	(TS=(cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinol* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol)) AND TS=(streptococcus pyogenes)	10 (export5)
#6	(TS=(cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinol* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol)) AND TS=(s. pyogenes)	1 (export6)
#7	(TS=(cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinol* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol)) AND TS=(anti streptococc*)	35 (export7)
#8	(TS=(cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinol* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol)) AND TS=(Staphylococcus aureus)	226 (export8)
#9	(TS=(cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinol* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol)) AND TS=(s. aureus)	91 (export9)
#10	(TS=(cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinol* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol)) AND TS=(staph aureus)	0
#11	(TS=(cannabis OR hemp OR marijuana OR phytocannabinoid* OR cannabinoid* OR cannabichromene* OR cannabicyclol* OR cannabidiol* OR cbd OR cannabielsoin* OR cannabigerol* OR cannabinodiol* OR cannabinol* OR cannabitriol* OR tetrahydrocannabi* OR thc OR dronabinol)) AND TS=(anti staphylococc*)	120 (export10)

Bibliography search

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Reference	Selected articles	Exclusion reason
Abichabki et al 2022[1]	Andrade, L. N. et al. Antimicrobial activity of cannabidiol against Escape pathogens: Inhibitory and bactericidal activity against vancomycin-resistant <i>Enterococcus faecium</i> , vancomycin-intermediate <i>Staphylococcus aureus</i> , and methicillin-resistant <i>S. aureus</i> . in ASM MICROBE 2018 (2018).	Article not available
	Abichabki, N. et al. Cannabidiol synergic antimicrobial activity combined with polymyxin B (PB) against PB susceptible and resistant Gram-Negative bacilli. in 30th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID) 2020 (2020)	Abstract not available
	abki, N. et al. In vitro Antibacterial Efcacy of Cannabidiol Plus Polymyxin B: Mixed and Together Against Multidrugresistant and Polymyxin B-resistant Gram-negative Bacilli. in World Microbe Forum Abstracts (2021).	Fulltext not available
	Makabenta, J. M. V. et al. Nanomaterial-based therapeutics for antibiotic-resistant bacterial infections. Nat. Rev. Microbiol. 19, 23–36 (2021)	Review
Blaskovich et al 2021[2]	None	
Farha 2020[3]	Blaskovich, M. A. T.; Kavanagh, A.; Ramu, S.; Levy, S.; Callahan, M.; Thurn, M., Cannabidiol is a Remarkably Active Gram-Positive Antibiotic. In ASM Microbe Conference, San Francisco, California, 2019	Presentation, not available
Kaur et al 2015[4]	Ali, E.M.M., A.Z.I. Almagboul, S.M.E. Khogali and U.M.A. Gergeir, 2012. Antimicrobial Activity of <i>Cannabis sativa</i> L. Chin. Med., 3: 61-64	Include
	Bhuvaneswari, S., R. Aravind, V. Kaviyarasan, K. Kalaivanan and S.B. Hariram, 2011. A comparative study on antibacterial activity of common weeds. Int. J. Pharm. Biosci., 2: 677-683	No cannabis
	Bonjar, G.H.S., S. Aghighi and A.K. Nik, 2004. Antibacterial and antifungal survey in plants used in indigenous herbal-medicine of South East regions of Iran. J. Biol. Sci., 4: 405-412.	ZOI
	De Boer, H.J., A. Kool, A. Broberg, W.R. Mziray, I. Hedberg and J.J. Levenfors, 2005. Anti-fungal and anti-bacterial activity of some herbal remedies from Tanzania. J. Ethnopharmacol., 96: 461-469.	No cannabis
	Sanguri, S., S. Kapil, P. Gopinathan, F.K. Pandey and T. Bhatnagar, 2012. Comparative screening of antibacterial and antifungal activities of some weeds and medicinal plants leaf extracts: An in-vitro study. Elixir Applied Bot., 47: 8903-8905 https://www.semanticscholar.org/paper/Comparative-screening-of-antibacterial-and-of-some-Sanguri-Kapil/ceac652e68599a44c21d474fd933b3243f4e8e1f	No cannabis
Wassmann et al 2020[5]	None	
Appendino et al 2008[6]	Ferenczy, L.; Gracza, L.; Jakobey, I. An antibacterial preparatum from hemp, Naturwissenschaften 1958, 45, 188	Wrong outcomes
	Krejci, Z. (1958). Hemp (<i>Cannabis sativa</i>) antibiotic drugs. II. Method & results of bacteriological experiments & preliminary clinical experience. Die Pharmazie. 13 (3), 155–166	No abstract available
	Rabinovich, A. S.; Aizenman, B. L.; Zelepukha, S. I. [Isolation and investigation of antibacterial properties of preparations from wild hemp (<i>Cannabis ruderalis</i>) growing in the Ukraine], Mikrobiol. Zh 1959, 21, 40–48.	No abstract available
	Schultz, O. E.; Haffner, G. A. Z. [A sedative and antibacterial active agent from the German hemp (<i>Cannabis sativa</i>)] Naturforsch. 1959, 14b, 98–100	No abstract available

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	Gibbons, S. Anti-staphylococcal plant natural products, Nat. Prod. Rep. 2004, 21, 263–277	Review
Chauhan 2017[7]	Zaika LL. Spices and herbs: Their antimicrobial activity and its determination. J Food Saf 1998;9:97-118	No cannabis
	Zavala MA, Perez S, Perez RM. Antimicrobial screening of some medicinal plants. Phytother Res 1997;11:368-71	No cannabis
	Dorman HJ, Deans SG. Antimicrobial agents from plants: Antibacterial activity of plant volatile oils. J Appl Microbiol 2000;88(2):308-16 https://pubmed.ncbi.nlm.nih.gov/10736000/	No cannabis
	Abu-Shanab B, Adwan G, Jarrar N, Abu-Safiya D, Adwan K. Antibacterial activities of some plant extracts utilized in popular medicine in Palestine. Turk J Biol 2004;28:99-102	No cannabis
	Deans SG, Ritchie G. Antibacterial properties of plant essential oils. Int J Food Microbiol 1987;5(2):165-80 https://www.sciencedirect.com/science/article/abs/pii/0168160587900341	No cannabis
	Naveed M, Tahir AK, Izhar A, Adil H, Hamid A, Zaheer UD, et al. In vitro antibacterial activity of <i>Cannabis sativa</i> leaf extracts to some selective pathogenic bacterial strains. Int J Biosci 2014;4(4):65-70	ZOI reported
	Raj T, Kumar P, Rathee R, Dubey K. Screening of some medicinal plants for their antimicrobial activities. Int J Pharm Pharm sci 2016;8(5):202-6. Available from: https://www.innovareacademics.in/journals/index.php/ijpps/article/view/9606/4746	No cannabis
Eisohly 1982[8]	N. S. Hatoum, W. M. Davis, I. W. Waters, M. A. Eisohly, and C E. Turner, Synergism of cannabichromene and CNS depressants in mice, Gen. Pharmacol., 12,351 (1981).	Drug interactions
Muscara 2021[9]	None	
Muscara 2021[10]	Chakraborty, S., Afaq, N., Singh, N., & Majumdar, S. (2018). Antimicrobial activity of <i>Cannabis sativa</i> , Thuja orientalis and Psidium guajava leaf extracts against methicillin-resistant <i>Staphylococcus aureus</i> . Journal of Integrative Medicine, 16(5), 350–357.	ZOI reported
	Karas, J. A., Wong, L. J. M., Paulin, O. K. A., Mazeh, A. C., Hussein, M. H., Li, J., & Velkov, T. (2020). The antimicrobial activity of cannabinoids. Antibiotics (Basel), 9(7), 406–416	Review
	Nalli, Y., Arora, P., Riyaz-Ul-Hassan, S., Ali, A., & Asif, A. (2018). Chemical investigation of <i>Cannabis sativa</i> leading to the discovery of a prenylspirodinone with anti-microbial potential. Tetrahedron Letters, 59 (25), 2470–2472.	IC50 reported
Turner 1981[11]	None	
Van Klingeran 1976[12]	None	
Frassinetti 2020[13]	Bazargani, M., & Rohloff, J. (2016). Antibiofilm activity of essential oils and plant extracts against <i>Staphylococcus aureus</i> and <i>Escherichia coli</i> biofilms. Food Control, 61, 156-164 https://www.sciencedirect.com/science/article/abs/pii/S0956713515302152	No cannabis
	Beoletto, V., Oliva, M. de L., Marioli, J. M., Carezzano, M. E. & Demo, M. S. (2016). Antimicrobial natural products against bacterial biofilms. In: K. Kon, & M. Rai. (Eds), Antibiotic Resistance. Mechanisms and new antimicrobial approaches (pp. 291-307). Tokyo (Japan): Academic Press. eBook SBN 9780128036426. https://www.researchgate.net/publication/305366267_Antimicrobial_Natural_Products_Against_Bacterial_Biofilms	Book chapter

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	Nissen, L., Zatta, A., Stefanini, I., Grandi, S., Sgorbati, B., Biavati, B., & Monti A. (2010). Characterization and antimicrobial activity of essential oils of industrial hemp varieties (<i>Cannabis sativa</i> L.). <i>Fitoterapia</i> , 81, 413-419.	No SA or SP
	Nostro, A., Guerrini, A., Marino, A., Tacchini, M., Di Giulio, M., Grandini, A., & Saraçoğlu, H. T. (2016). In vitro activity of plant extracts against biofilm-producing food-related bacteria. <i>International Journal of Food Microbiology</i> , 238, 33–39. https://pubmed.ncbi.nlm.nih.gov/27591384/	No cannabis
Galletta 2020[14]	Klahn, P. Cannabinoids-Promising Antimicrobial Drugs or Intoxicants with Benefits? <i>Antibiotics</i> 2020, 9, 297.	Review
	Silver, L.L.; Bostian, K. Screening of natural products for antimicrobial agents. <i>Eur. J. Clin. Microbiol. Infect. Dis.</i> 1990, 9, 455–461.	review
Martinenghi 2020[15]	Subramani, R.; Narayanasamy, M.; Feussner, K.D. Plant-derived antimicrobials to fight against multi-drug-resistant human pathogens. <i>3 Biotech</i> 2017, 7, 172. https://pubmed.ncbi.nlm.nih.gov/28660459/	review
	Anjum, M.; Azam, S.; Rehman, P.; Khadim, J. Evaluation of Antimicrobial Activity and Ethnobotanical Study of <i>Cannabis sativa</i> . <i>Pure Appl. Biol.</i> 2018, 7, 706–713.	ZOI
Nafis 2019[16]	Chouhan, S., Sharma, K., Guleria, S., 2017. Antimicrobial activity of some essential oils Present status and future perspectives. <i>Medicines</i> 4 (58), 1–21. https://doi.org/10.3390/medicines4030058 .	Review
	Novak, J., Zitterl-Eglseer, K., Deans, S.G., Franz, C.M., 2001. Essential oils of different cultivars of <i>Cannabis sativa</i> L. And their antimicrobial activity. <i>Flavour Fragr. J.</i> 16, 259–262. https://doi.org/10.1002/ffj.993 .	ZOI
Nigro 2022[17]	None	
Gibbons 2004[18]	None	
Subramani et al 2017[19]	None	
Beoletto et al 2016[20]	None	
Silver and Bostian 1990[21]	None	
Schofs et al 2021[22]	Nascimento GGF, Freitas PC, Silva GL. Antibacterial activity of plant extracts and phytochemicals on antibiotic-resistant bacteria. <i>Braz J Microbiol.</i> 2000;31(4):247–256. https://doi.org/10.1590/s1517-83822000000400003	no cannabis
	Atef NM, Shanab SM, Negm SI, Abbas YA. Evaluation of the antimicrobial activity of some plant extracts against antibiotic susceptible and resistant bacterial strains causing wound infection. <i>Bull Natl Res Cent.</i> 2019;43(1). https://doi.org/10.1186/s42269-019-0184-9	no cannabis
	Chandra H, Bishnoi P, Yadav A, Patni B, Mishra AP, Nautiyal AR. Antimicrobial resistance and the alternative resources with special emphasis on plant-based antimicrobials- a review. <i>Plants.</i> 2017;6(2):16. https://doi.org/10.3390/plants6020016	Review, no reference to cannabis
	Khan BA, Warner P, Wang H. Antibacterial properties of hemp and other natural fibre plants: a review. <i>Bio Res.</i> 2014;9(2):3642–3659. https://doi.org/10.15376/biores.9.2.3642-3659	review

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	Wasim K, Haq I, Ashraf M. Antimicrobial studies of the leaf of <i>Cannabis sativa</i> L. Pak J Pharm Sci. 1995;8(1):29-38.	ZOI
	Borchardt JR, Wyse DL, Sheaffer CC, et al. Antimicrobial activity of native and naturalized plants of Minnesota and Wisconsin. J Med Plant Res. 2008;2(5):98-110.	ZOI
	Lone TA, Lone RA. Extraction of cannabinoids from <i>Cannabis sativa</i> L plant and its potential antimicrobial activity. Univ J Med Dent. 2012;1(4):51-55.	ZOI
	Radwan MM, Elsohly MA, Slade D, Ahmed SA, Khan IA, Ross SA. Biologically active cannabinoids from high-potency <i>Cannabis sativa</i> . J Nat Prod. 2009;72(5):906-911. https://doi.org/10.1021/np900067k	IC50
	Stahl V, Vasudevan K. Comparison of efficacy of cannabinoids versus commercial oral care products in reducing bacterial content from dental plaque: a preliminary observation. Cureus. 2020;12(1):e6809. https://doi.org/10.7759/cureus.6809	Wrong outcomes
	Kosgodage US, Matewele P, Awamaria B, et al. Cannabidiol is a novel modulator of bacterial membrane vesicles. Front Cell Infect Microbiol. 2019;9:324. https://doi.org/10.3389/fcimb.2019.00324	Wrong study design
	Sadgrove NJ, Jones GL. From petri dish to patient: bioavailability estimation and mechanism of action for antimicrobial and immunomodulatory natural products. Front Microbiol. 2019;10:2470. https://doi.org/10.3389/fmicb.2019.02470	Review, no references in bibliography
Klahn 2020[23]	Ferenczy, L. Antibacterial Substances in Seeds. Nature 1956, 178, 639–640.	ZOI
	Monika, K.N.; Kaur, M. Antimicrobial analysis of leaves of <i>Cannabis sativa</i> . J. Sci. 2014, 4, 123–127	ZOI
	Sarmadyan, H.; Solhi, H.; Hajimir, T.; Najarian-Araghi, N.; Ghaznavi-Rad, E. Determination of the Antimicrobial Effects of Hydro-Alcoholic Extract of <i>Cannabis Sativa</i> on Multiple Drug Resistant Bacteria Isolated from Nosocomial Infections. Iran. J. Toxicol. 2014, 7, 967–972	include
	Fathordoobady, F.; Singh, A.; Kitts, D.D.; Singh, A.P. Hemp (<i>Cannabis sativa</i> L.) Extract: Anti-Microbial Properties, Methods of Extraction, and Potential Oral Delivery. Food Rev. Int. 2019, 664–684.	review
	Verma, R.S.; Padalia, R.C.; Verma, S.K.; Chauhan, A.; Darokar, M.P. The essential oil of 'bharg' (<i>Cannabis sativa</i> L.) for non-narcotic applications. Curr. Sci. 2014, 107, 645–650.	ZOI
	Raina, S.; Thakur, A.; Sharma, A.; Pooja, D.; Minhas, A.P. Bactericidal activity of <i>Cannabis sativa</i> phytochemicals from leaf extract and their derived Carbon Dots and Ag@Carbon Dots. Mater. Lett. 2019, 262, 127122.	Wrong outcomes
	Das, B.; Mishra, P.C. Antibacterial analysis of crude extracts from the leaves of Tagetes erecta and <i>Cannabis sativa</i> . Int. J. Environ. Sci. 2012, 2, 1605–1609.	ZOI, no SA, SP
	Mkpenie, V.N.; Essien, E.E.; Udoh, I.I. Effect of extraction conditions on total polyphenol contents, antioxidant and antimicrobial activities of <i>Cannabis sativa</i> L. Electron. J. Environ. Agric. Food Chem. 2012, 11, 300–307	ZOI
	Kakar, S.A.; Tareen, R.B.; Azam Kakar, M.; Jabeen, H.; Kakar, S.U.R.; Al-Kahraman, Y.M.S.A.; Shafee, M. Screening of antibacterial activity of four medicinal plants of Balochistan-Pakistan. Pakistan J. Bot. 2012, 44, 245–250	no cannabis
	Mathur, P.; Singh, A.; Srivastava, V.R.; Singh, D.; Mishra, Y. Antimicrobial activity of indigenous wildy growing plants: Potential source of green antibiotics. African J. Microbiol. Res. 2013, 7, 3807–3815	ZOI
	Tandon, C.; Mathur, P. Antimicrobial Efficacy of <i>Cannabis sativa</i> L. (Bhang): A Comprehensive Review. Int. J. Pharm. Sci. Rev. Res. 2017, 44, 94–100	review
	Glodowska, M.; Łyszcz, M. <i>Cannabis sativa</i> L. and its antimicrobial properties-A review. In Badania i Rozwój	review

Supplementary Materials S1. Search strategies

	Młodych Naukowców w Polsce–Agronomia i Ochrona Roślin; Leśny, J., Chojnicki, B., Panfil, M., Nyckowiak, J., Eds.; Młodzi Naukowcy: Poznań, Poland, 2017; pp. 77–82	
Chouhan <i>et al.</i> 2021[24]	None	
Fathordoobady <i>et al.</i> 2019[25]	Yasmeen, R.; Hashmi, A. S.; Anjum, A. A.; Saeed, S.; Muhammad, K. Antibacterial Activity of Indigenous Herbal Extracts against Urease Producing Bacteria. J. Anim. Plant Sci. 2012, 22 (2), 416–419.	no SP or SA
Głodowska and Lyszczyk 2016[26]	Gallucci MN, Oliva M, Casero C, et al. (2009) Antimicrobial combined action of terpenes against the food-borne microorganisms <i>Escherichia coli</i> , <i>Staphylococcus aureus</i> and <i>Bacillus cereus</i> . Flavour and Fragrance J, Vol. 24(6): 348–54.	No cannabis
Karas <i>et al.</i> 2020	Vu, T.T.; Kim, H.; Tran, V.K.; Le Dang, Q.; Nguyen, H.T.; Kim, H.; Kim, I.S.; Choi, G.J.; Kim, J.C. In vitro antibacterial activity of selected medicinal plants traditionally used in Vietnam against human pathogenic bacteria. BMC Complement. Altern. Med. 2016, 16, 32	Include
	Lelario, F.; Scrano, L.; Franchi, S.D.; Bonomo, M.G.; Salzano, G.; Milan, S.; Milella, L.; Bufo, S.A. Identification and antimicrobial activity of most representative secondary metabolites from different plant species. Chem. Biol. Technol. Agric. 2018, 5, 1–12.	no SP or SA
	Mikulcová, V.; Kašpárková, V.; Humpolíček, P.; Buňková, L. Formulation, Characterization and properties of hemp seed oil and its emulsions. Molecules 2017, 22, 700	ZOI
	Nadir, I.; Rana, N.F.; Ahmad, N.M.; Tanweer, T.; Batool, A.; Taimoor, Z.; Riaz, S.; Ali, S.M. Cannabinoids and terpenes as an antibacterial and antibiofouling promotor for pes water filtration membranes. Molecules 2020, 25, 691	ZOI
	Feldman, M.; Smoum, R.; Mechoulam, R.; Steinberg, D. Antimicrobial potential of endocannabinoid and endocannabinoid-like compounds against methicillin-resistant <i>Staphylococcus aureus</i> . Sci. Rep. 2018, 8, 17696	Wrong design
	Feldman, M.; Smoum, R.; Mechoulam, R.; Steinberg, D. Potential combinations of endocannabinoid/ endocannabinoid-like compounds and antibiotics against methicillin-resistant <i>Staphylococcus aureus</i> . PLoS ONE 2020, 15, e0231583.	Wrong design
Tandon and Mathur 2017[27]	Nasrullah, Suliman, Rahman K, Ikram M, Nisar M, Khan I, Screening of antibacterial activity of medicinal plants, Int J Pharm Sci Rev Res, 14, 2012, 25-29.	ZOI
Iseppi <i>et al.</i> 2019[28]	Pellati, F.; Brighenti, V.; Sperlea, J.; Marchetti, L.; Bertelli, D.; Benvenuti, S. New methods for the comprehensive analysis of bioactive compounds in <i>Cannabis sativa</i> L. (hemp). Molecules 2018, 23, 2639	no SP or SA
	Russo, E.B. Taming THC: Potential cannabis synergy and phytocannabinoid-terpenoid entourage effects. Br. J. Pharmacol. 2011, 163, 1344–1364.	Review
Ali <i>et al.</i> 2012[29]	None	
Sarmadyan <i>et al.</i> 2014[30]	Radosevi, Cacute A, KUPINI, Cacute M,GRLI, Cacute L. Antibiotic activity of various types of Cannabis resin. 1962;8(195):1007-9 https://www.nature.com/articles/1951007a0	wrong design

Supplementary Materials S1. Search strategies

	Sumthong P. Antimicrobial compounds as side products from the agricultural processing industry: Division of Pharmacognosy, Section of Metabolomics, Institute of Biology, Faculty of Science, Leiden University; 2007.p. 15-32	wrong design
Vu <i>et al.</i> 2016[31]	Tekwu EM, Pieme AC, Beng VP. Investigations of antimicrobial activity of some Cameroonian medicinal plant extracts against bacteria and yeast with gastrointestinal relevance. J Ethnopharmacol. 2012;142:265–73 https://www.sciencedirect.com/science/article/abs/pii/S037887411200298X?via%3Dihub	No cannabis
	Khan UA, Rahman H, Niaz Z, Qasim M, Khan J, Tayyaba, <i>et al.</i> . Antibacterial activity of some medicinal plants against selected human pathogenic bacteria. Eur J Microbiol Immunol. 2013;3:272–4.	No cannabis
	Fankam AG, Kuate JR, Kuete V. Antibacterial activities of Beilschmiedia obscura and six other Cameroonian medicinal plants against multi-drug resistant Gram-negative phenotypes. BMC Complement Altern Med. 2014;14:241	No cannabis
	Cowan MM. Plant products as antimicrobial agents. Clin Microbiol Rev. 1999;2:564–82	Review, no cannabis in bibliography
	Bussmann RW, Malca-Garcia G, Glenn A, Sharon D, Chait G, Diaz D, <i>et al.</i> . Minimum inhibitory concentrations of medicinal plants used in Northern Peru as antibacterial remedies. J Ethnopharmacol. 2010;32:1–8	No cannabis
	Moura-Costa GF, Nocchi SR, Ceole LF, de Mello JCP, Nakamura CV, Filho BPD, <i>et al.</i> . Antimicrobial activity of plants used as medicinals on an indigenous reserve in Rio das Cobras, Parana. Brazil J Ethnopharmacol. 2012;143:631–8	No cannabis
	Fomogne-Fodjo MCY, Vuuren SV, Ndinteh DT, Krause RWM, Olivier DK. Antibacterial activity of plant from Central Africa used traditionally by the Bakola pygmies for treating respiratory and tuberculosis-related symptoms. J Ethnopharmacol. 2014;115:123–31.	No cannabis
	Ocheng F, Bwanga F, Joloba M, Borg-Karlson AK, Gustafsson A, Obua C. Antibacterial activity of extracts from Ugandan medicinal plants used for oral care. J Ethnopharmacol. 2014;155:852–5	No cannabis
	Robles-Zepeda RE, Coronado-Aceves EW, Velazquez-Contreras CA, Ruiz Bustos E, Navarro-Navarro M, Garibay-Escobar A. In vitro anti-mycobacterial activity of nine medicinal plants used by ethnic groups in Sonora, Mexico. BMC Complement Altern Med. 2013;13:329	No cannabis
	Khan N, Abbasi AM, Dastagir G, Nazir A, Shah GM, Shah MM, <i>et al.</i> . Ethnobotanical and antimicrobial study of some selected medicinal plants used in Khyber Pakhtunkhwa (KPK) as potential source to cure infectious diseases. BMC Complement Altern Med. 2014;14:122	No cannabis
Zengin <i>et al.</i> 2018[32]	Khan, S.; Ur-Rehman, T.; Mirza, B.; Ul-Haq, I.; Zia, M. Antioxidant, antimicrobial, cytotoxic and protein kinase inhibition activities of fifteen traditional medicinal plants from Pakistan. Pharm. Chem. J. 2017, 51, 391–398	Wrong outcomes

ZOI: zone of inhibition, SA: *Staphylococcus aureus*, SP: *Streptococcus pyogenes*

Supplementary Materials S2. Details of rejected articles

Following are the details of articles rejected at the full-text screening.

Thirteen studies were excluded due to wrong study design[33-45]. Twenty-nine studies were excluded because wrong outcomes[46-74].

Three articles were excluded because they did not have full texts[75-77].

Supplementary Table S1. Descriptive characteristics of the included studies (n=24)

Supplementary Table S1. Descriptive characteristics of the included studies (n=24).

Reference, study origin	Study objective	Names and details of cannabinoids examined	Sources of cannabinoids examined	Description of quantitative antibacterial studies conducted	Study limitations	Study quality
Abichabki et al. 2022[1] Brazil, Spain	To evaluate the in vitro antibacterial activity of ultrapure CBD against a wide diversity of bacteria	CBD	Purchase: (BSPG-Pharm, Sandwich, UK, purity=99.6%)	MIC Assay: broth microdilution (EUCAST and ISO standards) Final inoculum: not given Culture medium: (for all <i>S. aureus</i> : CAMHB, <i>S. aureus</i> ATCC 29213 also tested in MH-F, <i>S. pyogenes</i> in MH-F) Incubation: not given Plate type: 96-well microplates polystyrene, round bottom, non-treated Solvent (stock solution): MeOH	-	1
Ali et al. 2012[29] Sudan	To evaluate the antimicrobial activity of the extracts of <i>C. sativa</i> grown in Sudan against standard bacteria and the fungi	Seeds and the whole plant of <i>C. sativa</i> were sequentially extracted into petroleum ether and MeOH. MeOH extract was used to test MIC	Extracted	MIC Assay: Agar plate dilution method Final inoculum: not given Culture medium: not given Incubation: not given Solvent (stock solution): not given	MIC method was only given in the abstract, no description in methodology.	3
Appendino et al. 2008[6] Italy, UK	To investigate the antibacterial profile of five major cannabinoids; of their alkylation and acylation products; and of a selection of their carboxylic precursors (pre-cannabinoids) and synthetic positional isomers (abnormal cannabinoids)	CBC, CBDA[78], CBD, CBGA[79], CBG, CBGA methyl ester, CBN, THCAA[3], Δ^9 -THC, abn-CBD, abn-CBG, carmagerol, CBD-di-Ac[80], CBDM[81], CBD dimethyl ether[81], CBDA methyl ester[82], phenethyl ester of CBDA, CBG-di-Ac, CBG monomethyl ether, CBG dimethyl ether, phenethyl ester of CBGA, 3'-bis-prenyl CBD	Isolated from <i>C. sativa</i> : THC, CBD, CBDA, CBG, CBGA, THCAA Semi-synthesis: CBN, CBD-di-Ac, CBD monomethyl ether, CBD dimethyl ether, CBDA methyl ester, phenethyl ester of CBDA, CBGA methyl ester, CBG-di-Ac, CBG monomethyl ether, CBG dimethyl ether, phenethyl ester of CBGA Synthesis: CBG, CBC, abn-CBD, abn-CBG, 3'-bis-prenyl	MIC Assay: broth microdilution Final inoculum: 5×10^5 CFU/mL Culture medium: CAMHB Incubation: 37 °C for 18 h Plate type: Nunc 96-well microtiter Solvent (stock solution): DMSO	-	1

Supplementary Table S1. Descriptive characteristics of the included studies (n=24)

			CBD			
Blaskovich et al. 2021[2] Australia, New Zealand, US	To evaluate the antimicrobial activity of cannabinoids	7-hydroxycannabidiol, 7-nor-7-carboxycannabidiol, 7-nor-7-carboxy-cannabidivarin, 7-nor-7-hydroxymethyl-cannabidivarin, CBD, CBDA, CBDV, CBG, CBGA, CBNA, MTC-002, MTC-005, MTC-007, MTC-008, MTC-009, MTC-011, MTC-012, MTC-013, MTC-014, MTC-017, MTC-018, (-)- Δ^9 -THC, THCV, THCVA, THCA-A, (-)- Δ^8 -THC	Purchase: CBD (from AMRI), 7-hydroxycannabidiol, 7-nor-7-carboxycannabidiol, CBDA, CBG, CBGA, CBNA, THCV, THCVA, (-)-Δ^9-THC, THCA-A, (-)-Δ^8-THC (from Kinesis Australia Pty Ltd., distributor Cerilliant Corporation) Synthesis: CBDV, 7-nor-7-hydroxymethyl-cannabidivarin (purity=98.3%), 7-nor-7-carboxy-cannabidivarin (100%), MTC-002 (100%), MTC-005 (97.2%), MTC-007 (99.0%), MTC-008 (99.6%), MTC-009 (99.8%), MTC-011 (98.5%), MTC-012 (99.0%), MTC-013 (99.6%), MTC-014 (99.8%), MTC-017 (97.6%), MTC-018 (98.9%)	MIC Aerobic assay Assay: broth microdilution (CLSI) Final inoculum: 5×10^5 CFU/mL Culture medium: CAMHB (for <i>S. aureus</i>, MRSA and VRSA), CAMHB+ 3% LHB (<i>S. pyogenes</i>) Incubation: 37 °C for 20 h Plate type: flat bottom 96-well polystyrene (Corning, Cat. No. 3370) Solvent (stock solution): DMSO Anarobic assay Assay: broth microdilution Final inoculum: 5×10^5 CFU/mL Culture medium: BHI broth with 1% cysteine Incubation: 10%CO₂/5% H₂, 37 °C for 48 h Plate type: flat bottom 96-well polystyrene (Corning, Cat. No. 3370) Solvent (stock solution): DMSO	-	1
Chauhan et al. 2017[7] India	To evaluate the antibacterial effect of Himalayan medicinal plants on several human pathogens	MeOH extract of <i>C. sativa</i> leaves	Extracted	MIC Assay: broth microdilution Final inoculum: not given Culture medium: NB Incubation: 37°C for 24 h Plate type: not given Solvent (stock solution): DMSO	-	3
Eisohly et al. 1982[8] US	To describe the synthesis and evaluate antimicrobial activities of CBC homologs, analogs, and isomers	CBC[83], CBC-C ₀ [11,84], CBC-C ₁ [11,84], iso-CBC-C ₀ [11], 2-Methyl-2-(4'-methylpentyl)-5-hydroxy-7-methylchroman, CBG-C ₁ , 2-	Synthesis CBC- C ₁ (>95% pure)	MIC Assay: Broth macrodilution Final inoculum: not given Culture medium: not given Incubation: 24 h and 48 h	The study was conducted before CLSI guidelines	3

Supplementary Table S1. Descriptive characteristics of the included studies (n=24)

	and that of CBG-C ₁ , iso-CBG-C ₁ , and tetrahydrocannabigerol-C ₁	Tetrahydrogeranyl-5-methyl Resorcinol, 2-Methyl-2-(4'-methylpent-3'-enyl)-5-hydroxy-7-pentadec-8''-enylchromene, 2-Methyl-2-(4'-methylpent-3'-enyl)-5,7-dihydroxychromene		<i>Solvent (stock solution)</i> : not given	establish	
Farha et al. 2020[3] Canada, Egypt	To investigate the antibacterial, anti-biofilm and anti-persister activity of a variety of cannabinoids	CBC, CBCA, CBD, CBDA, CBDV, CBDVA, CBG, CBGA, CBL, CBN, (-)Δ ⁸ -THC, (-)Δ ⁹ -THC, exo-THC, THCAA, THCV, THCVA, (±)11-nor-9-carboxy-Δ ⁹ -THC, (±)11-hydroxy-Δ ⁹ -THC	Synthesis: CBG Purchase: All other cannabinoids (Sigma, Oakville, ON, Canada)	MIC <i>Assay</i> : broth microdilution (CLSI) <i>Final inoculum</i> : not given <i>Culture medium</i> : CAMHB <i>Incubation</i> : not given <i>Plate type</i> : not given <i>Solvent (stock solution)</i> : not given	-	3
Frassinetti et al. 2020[13] Italy	To evaluate the inhibitory activity of <i>C. sativa</i> L. seeds extract, cultivar Futura 75, on the biofilm formation by <i>S. aureus</i>	80% EtOH extract of <i>Cannabis sativa</i> L. cultivar Futura 75 seeds	Extracted	MIC <i>Assay</i> : broth microdilution <i>Final inoculum</i> : 1-5 x 10 ⁵ CFU/mL <i>Culture medium</i> : MHB <i>Incubation</i> : 37 °C for 24 h <i>Plate type</i> : not given <i>Solvent (stock solution)</i> : sterile water	-	3
Galletta et al. 2020[14] Australia	To characterise the ability of the CBCA and its related synthetic analogues to successfully inhibit the growth of MRSA and other clinically relevant pathogenic bacteria	(±)-CBCA, (±)-CBCM, (±)-CBCTFA, (±)-CBLM, CBDVM	Synthesis >95% purity	MIC <i>Assay</i> : broth microdilution <i>Final inoculum</i> : not given <i>Culture medium</i> : LB broth <i>Incubation</i> : 37 °C for overnight <i>Plate type</i> : not given <i>Solvent (stock solution)</i> : DMSO	-	3
Iseppi et al. 2019[28] Italy	Aimed at the phytochemical characterization of 17 hemp EO belonging to different varieties, together with the evaluation of their antibacterial activity	EO of <i>C. sativa</i> (from different fibre-type varieties, from inflorescences or the whole plants) CBD	Extracted: EO Purchase: CBD (Cerilliant, Round Rock, TX, US)	MIC <i>Assay</i> : Broth microdilution (CLSI) <i>Final inoculum</i> : 10 ⁶ CFU/mL <i>Culture medium</i> : NB <i>Incubation</i> : 37 °C for 24 h <i>Plate type</i> : not given <i>Solvent (stock solution)</i> : MeOH (CBD)	Higher final inoculum concentration	1
Kaur et al. 2015[4] India	To test the efficacy of some common weeds extracts against the	Separate extractions of EtOH, MeOH, acetone and water of <i>C. sativa</i> leaves	Extracted	MIC <i>Assay</i> : modified agar well diffusion method	MIC: lowest concentration of the extract	3

Supplementary Table S1. Descriptive characteristics of the included studies (n=24)

	bacterial and fungal pathogens			<i>Final inoculum:</i> 5 x 10 ⁵ CFU/mL <i>Culture medium:</i> NA <i>Incubation:</i> 37°C for 24 h <i>Solvent (stock solution):</i> DMSO	that completely inhibited the growth of the microbe, showed by a clear zone of inhibition (>12 mm) This method is not described in CLSI	
Martinenghi et al. 2020[15] Denmark	To have an overview of the antimicrobial effect of CBDA, and CBD	CBD, CBDA	Isolated from inflorescences of fiber type <i>C. sativa</i> L	MIC <i>Assay:</i> broth microdilution (CLSI) <i>Final inoculum:</i> not given <i>Culture medium:</i> not given <i>Incubation:</i> not given <i>Plate type:</i> not given <i>Solvent (stock solution):</i> EtOAc (CBDA) and MeOH (CBD)	-	1
Muscara et al. 2021[9] Italy	To evaluate and compare the phytochemical profile, antioxidant and antimicrobial properties of two different standardized extracts obtained from dried flowering tops (as such and after hydrodistillation of the essential oil) of a non-psychoactive CBD-rich <i>C. sativa</i> L. var. <i>fibrante</i>	0.1% acetic acid/hexane extract of dried flowering tops <i>C. sativa</i> L. var. <i>fibrante</i> as such and after hydrodistillation of the essential oil	Extracted	MIC <i>Assay:</i> broth microdilution (CLSI) <i>Final inoculum:</i> not given <i>Culture medium:</i> not given <i>Incubation:</i> 20 h <i>Plate type:</i> not given <i>Solvent (stock solution):</i> DMSO MBC (CLSI) <i>Culture medium:</i> MHA <i>Incubation:</i> 24 h	-	1
Muscara et al. 2021[10] Italy	To chemically and biologically characterize extracts of <i>C. sativa</i>	0.1% acetic acid/hexane extract of dried flowering tops of <i>C. sativa</i> Chinese accession (G-309) as such and after hydrodistillation of the essential oil	Extracted	MIC <i>Assay:</i> broth microdilution (CLSI) <i>Final inoculum:</i> not given <i>Culture medium:</i> not given <i>Incubation:</i> 24 h <i>Plate type:</i> not given	-	3

Supplementary Table S1. Descriptive characteristics of the included studies (n=24)

				Solvent (stock solution): not given		
				MBC (CLSI) Culture medium: not given Incubation: 24 h at 37°C		
Nafis et al. 2019[16] Morocco, US	To characterize the EO of Moroccan <i>C. sativa</i> , to evaluate its antioxidant and antimicrobial properties, and to evaluate the possible synergistic combination of this EO with ciprofloxacin and fluconazole against some resistant bacteria and clinic pathogenic yeasts	EO from the aerial parts of <i>C. sativa</i>	Extracted	MIC Assay: broth microdilution (CLSI) Final inoculum: 1 x 10 ⁵ CFU/mL Culture medium: not given Incubation: not given Plate type: not given Solvent (stock solution): DMSO	-	3
Nigro et al. 2022[17] Italy	To optimize fast and low-cost purification strategies of CBDA, and a deep investigation on its nutraceutical and cosmeceutical properties	CBDA	Extracted from <i>C. sativa</i>	MIC Assay: modified version of the broth microdilution (CLSI) Final inoculum: 10 ⁵ CFU/mL Culture medium: BHI broth Incubation: 37 °C for 3-5 h Plate type: not given Solvent (stock solution): not given	inoculum was shaken at 225 rpm for 15-18 h before inoculation incubated for considerably lesser time	3
Pellegrini et al. 2021[85] Italy	To characterize <i>C. sativa</i> L. cv Futura 75 inflorescences, cultivated in the Abruzzo territory, for their volatile fraction, to investigate the essential oil extracted from these inflorescences for the antioxidant potentialities, terpenic	EO of <i>C. sativa</i> 'Futura 75' inflorescence	Extracted	MBC (CLSI) Method not described MIC [86] Assay: broth microdilution (CLSI) Final inoculum: 5 x 10 ⁵ CFU/mL Culture medium: TSB Incubation: 37°C for 48 h Solvent (stock solution): Phosphate Buffer Saline 50 mM pH 7.0 and Tween 80 (1%)	Considerably longer incubation time	3

Supplementary Table S1. Descriptive characteristics of the included studies (n=24)

	profile and antibacterial activity			MBC [86] <i>Culture medium:</i> TSA <i>Incubation:</i> 37°C		
Sarmadyan et al. 2014 [30] Iran	To investigate the antibacterial property of <i>C. sativa</i> on standard and resistant bacteria with multiple forms of resistance which are increasingly found in hospitals	Hydro-alcoholic extract of <i>C. sativa</i>	Extracted	MIC <i>Assay:</i> broth macrodilution <i>Final inoculum:</i> 1.5 x 10 ⁸ CFU/mL <i>Culture medium:</i> not given <i>Incubation:</i> 37°C for 24 h <i>Solvent (stock solution):</i> DMSO	High inoculum size, negative control misinterpreted as the positive control	1
Schuetz et al. 2021 [87] Canada, US	To characterize CBG's activity and safety profile for use on skin	CBD, CBG	Yeast fermentation: CBG	MIC no details available	Data extracted from abstract and the poster, no details available on the method	3
Turner and Elsohly 1981 [11] US	To determine antiinflammatory, antibacterial, and antifungal properties of CBC and its homologs and isomers	CBC, CBC-C ₀ , CBC-C ₁ , iso-CBC-C ₀	Synthesis	MIC <i>Assay:</i> broth macrodilution <i>Final inoculum:</i> one loop-full of a 1:10 dilution of the 24-hour-old broth culture of the test organisms in sterile water <i>Culture medium:</i> Eugon broth (50 mL) <i>Incubation:</i> 24 h and 48 h <i>Solvent (stock solution):</i> not given	-	3
van Klingerden and Ten 1976 [12] The Netherlands	To quantitative determinations of the bacteriostatic and bactericidal action of purified delta-9-THC and CBD	CBD, Δ9-trans-THC	Isolate: CBD (method not given) Obtain: Δ9-trans-THC (Bureau of Narcotic Drugs of the United Nations)	MIC <i>Assay:</i> Agar dilution method <i>Final inoculum:</i> 10 ³ CFU/mL <i>Culture medium:</i> NA, horse blood agar (4% horse serum) <i>Incubation:</i> 37°C overnight <i>Solvent (stock solution):</i> 70% EtOH	Low final inoculum	3

Supplementary Table S1. Descriptive characteristics of the included studies (n=24)

Vu et al. 2016[31] Vietnam, Korea	To validate the traditional use of selected medicinal plants against common bacteria by evaluating their in vitro antibacterial activity	MeOH extract of leaves and branches of <i>C. sativa</i>	Extract	MIC <i>Assay:</i> broth microdilution <i>Final inoculum:</i> 10⁵ CFU/mL before adding the extract <i>Culture medium:</i> NB <i>Incubation:</i> 37 °C for 24–h <i>Plate type:</i> sterile 96-well plates <i>Solvent (stock solution):</i> DMSO MBC <i>Culture medium:</i> NA <i>Incubation:</i> 37 °C, 24–48 h	Low final inoculum, Volume of extract, and dilution of the inoculum were not given. Therefore, exact final inoculum is unknown. Inoculum was added and then the extracts were added.	1
Wassmann et al. 2020[5] Denmark	To characterise CBD as a potential helper compound against resistant bacteria in combination with the cyclic peptide antibiotic BAC	CBD	Purchase (Sigma Aldrich)	MIC <i>Assay:</i> broth microdilution <i>Final inoculum:</i> 5 x 10⁵ CFU/mL <i>Culture medium:</i> BHI or MHB <i>Incubation:</i> 37 °C for 16–22 hours with agitation <i>Plate type:</i> 96-well plates (Nunc A/S or Sarstedt) <i>Solvent (stock solution):</i> EtOH	Plates were agitated	3
Zengin et al. 2018[32] Italy, Turkey	To explore chemically and biologically both the essential oil and the aromatic water of Italian <i>C. sativa</i> L.	EO of <i>C. sativa</i> L. Futura 75 cultivar (aerial parts consisting of leaves, inflorescences, and thinner residues of stem)	Extracted 10% (v/v) solutions in EtOH used in testing	MIC <i>Assay:</i> broth microdilution (NCCLS guideline) <i>Final inoculum:</i> 1.0 × 10⁵ CFU/mL <i>Culture medium:</i> MHB <i>Incubation:</i> 37 °C for 24 h <i>Plate type:</i> 96-well polystyrene microtitre plates (Eppendorf, Hamburg, Germany) <i>Solvent (stock solution):</i> 10% (v/v) solutions in EtOH MBC <i>Culture medium:</i> not given <i>Incubation:</i> not given	-	1



Supplementary Table S2. PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	title
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	abstract
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Introduction
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Introduction
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Methods
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Methods, Supplementary material S1
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Supplementary material S1
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Methods
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Methods
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Methods
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Methods
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Methods
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Methods
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Methods, results
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Methods, results
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Methods, results
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Methods, results
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Methods, results
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Not applicable
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Not applicable



Supplementary Table S2. PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Not applicable
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	PRISMA chart, results
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Supplementary material S2
Study characteristics	17	Cite each included study and present its characteristics.	results, tables 1-6, Supplementary Table S1
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Supplementary material S1
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Results, figures 2-4, Supplementary material S1
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Not applicable
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Results, figures 2-4
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Results
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Results
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Results
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Results
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Discussion
	23b	Discuss any limitations of the evidence included in the review.	Discussion
	23c	Discuss any limitations of the review processes used.	Discussion
	23d	Discuss implications of the results for practice, policy, and future research.	Discussion
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Method
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Method
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Not applicable
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Acknowledgement
Competing interests	26	Declare any competing interests of review authors.	Competing interests



Supplementary Table S2. PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	Results, Supplementary materials

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, *et al.*. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: <http://www.prisma-statement.org/>



Supplementary Table S3. PRISMA 2020 for Abstracts Checklist

Section and Topic	Item #	Checklist item	Reported (Yes/No)
TITLE			
Title	1	Identify the report as a systematic review.	Yes
BACKGROUND			
Objectives	2	Provide an explicit statement of the main objective(s) or question(s) the review addresses.	Yes
METHODS			
Eligibility criteria	3	Specify the inclusion and exclusion criteria for the review.	Yes
Information sources	4	Specify the information sources (e.g. databases, registers) used to identify studies and the date when each was last searched.	Yes
Risk of bias	5	Specify the methods used to assess risk of bias in the included studies.	Yes
Synthesis of results	6	Specify the methods used to present and synthesise results.	Yes
RESULTS			
Included studies	7	Give the total number of included studies and participants and summarise relevant characteristics of studies.	Yes
Synthesis of results	8	Present results for main outcomes, preferably indicating the number of included studies and participants for each. If meta-analysis was done, report the summary estimate and confidence/credible interval. If comparing groups, indicate the direction of the effect (i.e. which group is favoured).	Yes
DISCUSSION			
Limitations of evidence	9	Provide a brief summary of the limitations of the evidence included in the review (e.g. study risk of bias, inconsistency and imprecision).	Yes
Interpretation	10	Provide a general interpretation of the results and important implications.	Yes
OTHER			
Funding	11	Specify the primary source of funding for the review.	Yes
Registration	12	Provide the register name and registration number.	Yes

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, *et al.*. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: <http://www.prisma-statement.org/>

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