Asian Journal of Chemistry Vol. 21, No. 5 (2009), 4139-4140

NOTE

Antimicrobial Activity of *Cotinus coggyria* from Turkey

BASARAN DULGER*, NURCIHAN HACIOGLU and S. BILEN†
Department of Biology, Faculty of Science & Arts
Canakkale Onsekiz Mart University, 17100 Canakkale, Turkey
E-mail: basarandulger@yahoo.com

Ethanolic extract obtained from *Cotinus coggyria* Scop. was investigated for its antimicrobial activity against *Bacillus cereus, Bacillus subtilis, Staphylococcus aureus, Micrococcus luteus, Escherichia coli, Enterobacter aerogenes, Proteus vulgaris, Pseudomonas aeuginosa, Pseudomonas putida, Salmonella typhimurium, Salmonella typhi, Hanseniaspora guilliermondii, Rhodotorula rubra, Kluyveromyces fragilis, Kluyveromyces marxianus, Debaryomyces hansenii, Candida utilis* and *Candida albicans* by disc diffusion method. The extracts had strong antimicrobial activity against bacteria, but weak activity was observed against the yeast cultures used in this study.

Key Words: Antimicrobial activity, *Cotinus coggyria*.

Cotinus coggyria Scop. (*Anacardiaceae*) is frequent and locally common in some parts of Turkey. Turkish local names for this plant are Duman Agaci, Peruke Çalisi and Boyaci Sumagi. The leaves are used as antiseptic, antiinflammatory, antimicrobial, antihemorrhagic, wound-healing and against diarrhoea as traditional medicine in Turkey[1]. In this work, the ethanolic extracts obtained from wild-growing *C. coggyria* in Turkey have been investigated for its antimicrobial activity.

The aerial parts of the plant were dried in an oven at 40 °C (12 h) and powdered. The crude plant extracts were obtained by extracting dried powdered plant (50 g) with 95 % ethanol (200 mL) for 48 h[2]. The extracts were then filtered through a Buchner funnel and the solvent was removed under reduced pressure at 60-65 °C on a rotary evaporator. The extract was removed and dried completely at 37 °C, kept at 4 °C in a dessicator and tested for antimicrobial activity within 10 d after preparation. Antimicrobial activity tests were performed using the NCCLS standard procedure[3,4] against the following microorganisms: *Bacillus cereus, Bacillus subtilis, Staphylococcus aureus, Micrococcus luteus, Escherichia coli, Enterobacter aerogenes, Proteus vulgaris, Pseudomonas aeuginosa, Pseudomonas putida, Salmonella typhimurium* and *Salmonella typhi* as bacteria and *Hanseniaspora guilliermondii, Rhodotorula rubra, Kluyveromyces fragilis, Kluyveromyces marxianus, Debaryomyces hansenii, Candida utilis* and *Candida albicans* as fungi.

†Faculty of Fisheries, Canakkale Onsekiz Mart University, 17100 Canakkale, Turkey.

Antimicrobial activity was determined based on the inhibitory zones around the colonies (Table-1). The ethanolic extract of *C. coggyria* showed antimicrobial activity against all tested microorganisms with inhibition zones ranged from 10.4 to 22.8 mm for bacteria, 11.8 to 16.2 mm for the yeast cultures. The extract is more effective than those of antibacterial agent chloramphenicol against *Bacillus subtilis*, *Staphylococcus aureus* and *Micrococcus luteus*. Notably, *Staphylococus aureus* is the most susceptible to the extract of the plant among test bacteria. While the extracts have a moderate activity against *Bacillus cereus, Escherichia coli* and *Enterobacter aerogenes* in comparison to the standard antibacterial antibiotic, they have weak antibacterial effect against the other bacteria. In case of antifungal activity, the ethanol extract obtained from *C. coggyria* has a moderate antiyeast effect than the standard antifungal antibiotic clotrimazole. Besides, *Rhodotorula rubra* is the most susceptible yeast to the extract among test fungi.

TABLE-1
ANTIMICROBIAL ACTIVITY OF *Cotinus coggyria* Scop.

Microorganisms	Zone of inhibition (mm)[a]	
	EtOH extracts	Standards[b]
Bacteria		**Chl**
Bacillus cereus	15.6	16.2
Bacillus subtilis	16.2	15.8
Staphylococcus aureus	22.8	18.2
Micrococcus luteus	19.2	17.8
Escherichia coli	12.4	18.4
Enterobacter aerogenes	13.6	18.2
Proteus vulgaris	10.4	16.6
Pseudomonas aeruginosa	11.2	24.8
Pseudomonas putida	12.4	20.4
Salmonella typhimurium	10.4	16.8
Salmonella typhi	11.2	16.0
Fungi		**Clt**
Hanseniaspora guilliermondii	14.2	20.2
Rhodotorula rubra	16.2	18.2
Kluyveromyces fragilis	13.8	18.6
Kluyveromyces marxianus	12.4	16.2
Debaryomyces hansenii	11.8	20.4
Candida utilis	14.6	18.2
Candida albicans	13.4	18.8

[a]Values, including diameter of the filter paper disc (6.0 mm), are means of 3 replicates.
[b]Chl: Chloramphenicol (10 µg/disc) for bacteria; Clt: Clotrimazole (50 IU/disc) for fungi.

REFERENCES

1. B. Demirci, F. Demirci and K.H.C. Baser, *Flavour Frag. J.*, **18**, 43 (2003).
2. N.H. Khan, M.S.A. nur-E Kamal and M. Rahman, *Indian J. Res.*, **87**, 395 (1988).
3. NCCLS, Performance Standards for Antimicrobial Disk Susceptibility Tests, Standard, NCCLS M100-S12, Wayne: Pennsylvania (2002).
4. C.H. Collins, P.M. Lyre and J.M. Grange, Microbiological Methods, Butterworth Co. Ltd., London, edn. 6, p. 410 (1989).

(*Received*: 11 November 2008; *Accepted*: 25 February 2009) AJC-7302