



Dipartimento di Scienze del Farmaco
Università degli Studi di Pavia

DETERMINAZIONE DEL CONTENUTO DI GALANGINA NELL'ESTRATTO DI PROPOLI FORNITO DALL' AZIENDA "DOTT. STEFANO FARALLI SCARL" (vedi scheda tecnica allegata)

Reagenti:

- galangina standard (Phytolab GmbH & Co. KG Germany);
- metanolo per HPLC (VWR);
- acido formico (1 M) per HPLC (Sigma-Aldrich).

Campione:

Estratto di propoli fornito dall' Azienda "Dott. Stefano Faralli scarl" con sede in Milano, Piazzale Cadorna 9, 20123 Milano P. IVA 06749480965 e consegnato in data 7 febbraio 2013.
Scheda tecnica del prodotto.

Metodo HPLC-DAD

La determinazione della galangina è stata condotta mediante il metodo proposto da Volpi et al. (*Journal of Pharmaceutical and Biomedical Analysis*, 2006, 42: 354-361. *Analysis of flavonoids from propolis by on-line HPLC-electrospray mass spectrometry*. Volpi N., Bergonzini G.) a cui sono state apportate le seguenti modifiche:

- Sistema HPLC-DAD Agilent 1100 (Agilent, Waldbronn, Germany), costituito da una pompa quaternaria, auto-campionatore con termostato dotato di loop di iniezione da 5 μ l, termostato per colonna, rivelatore DAD. Per il controllo del sistema e l'analisi dei dati è stato impiegato il software Chemstation.
- Fase stazionaria: ZORBAX SB C18 150x4,6 mm - 5 μ m (Agilent Technologies, Waldbronn, Germany);
- Fase mobile: metanolo e acido formico (0,1%) in gradiente come riportato in tabella 1.
- Velocità di flusso: 0,5 ml/min;
- Temperatura della colonna: 25 °C;
- Durata analisi: 115 minuti.
- $\lambda = 395$ nm



Dipartimento di Scienze del Farmaco – sede amministrativa Viale Taramelli 12 –27100 PAVIA
Tel. +39-0382-987358-7362 Fax +39-0382-422975 e-mail: emdip07@unipv.it
indirizzo web: <http://chifar.unipv.eu/site/home.html>
Sezione di Chimica e Tecnologia Farmaceutiche - Viale Taramelli 12 –27100 PAVIA
Sezione di Farmacologia - Viale Taramelli 14 –27100 PAVIA

Tabella 1.

Tempo min	Metanolo % v/v	Acido formico (0,1%) % v/v
0	50	50
20	60	40
50	60	40
100	100	0
105	50	50
115	50	50

Analisi HPLC-DAD

Lo studio è stato condotto nel seguente modo:

- 1) acquisto dello standard di galangina;
- 2) messa a punto di un metodo riportato in letteratura che permetta di determinare la galangina nell'estratto di propoli oggetto di studio mediante tecnica HPLC-DAD;
- 3) analisi del campione.

Dal cromatogramma ottenuto dall'analisi della galangina standard registrato a λ 395 nm si evince che tale sostanza presenta, nelle condizioni operative applicate, tempo di ritenzione (RT) pari a 36,569 min e mostra lo stesso spettro UV-Vis riportato in letteratura per tale sostanza.

I risultati dell'analisi HPLC-DAD condotta sull'estratto di propoli diluito 1:100 con metanolo hanno indicato la presenza di un picco a RT 37,116 min. L'analisi HPLC-DAD dell'estratto di propoli ha permesso pertanto di identificare la galangina sulla base del confronto dei tempi di ritenzione (RT) e degli spettri UV-Vis del composto standard e del corrispondente analita presente nell'estratto (Figura 1 - 4).

Figura 1. Cromatogramma RP-HPLC-DAD ottenuto dall'analisi di una soluzione metanolica di galangina standard

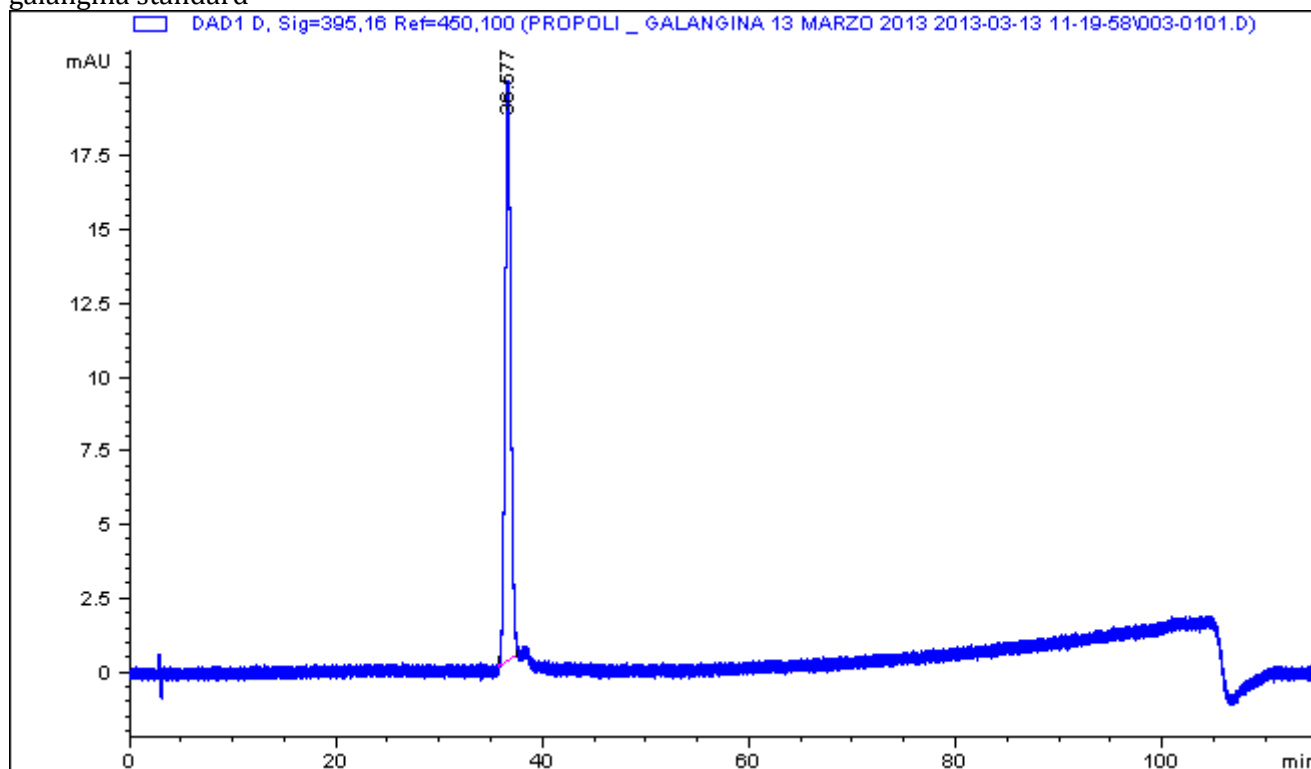
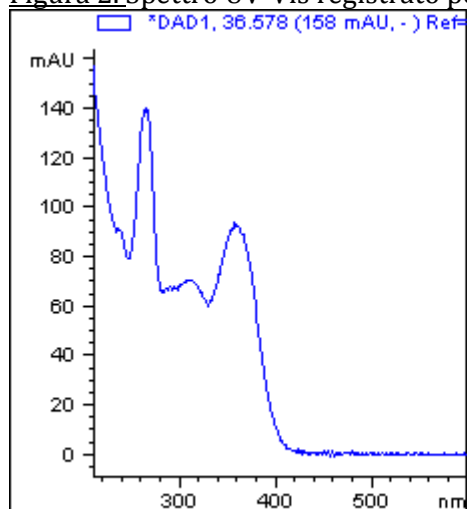


Figura 2. Spettro UV-Vis registrato per il picco con tempo di ritenzione 36,578 min



Dipartimento di Scienze del Farmaco – sede amministrativa Viale Taramelli 12 –27100 PAVIA

Tel. +39-0382-987358-7362 Fax +39-0382-422975 e-mail: emdip07@unipv.it

indirizzo web: <http://chifar.unipv.eu/site/home.html>

Sezione di Chimica e Tecnologia Farmaceutiche - Viale Taramelli 12 –27100 PAVIA

Sezione di Farmacologia - Viale Taramelli 14 –27100 PAVIA

Figura 3. Cromatogramma RP-HPLC-DAD ottenuto dall'analisi dell'estratto di propoli oggetto di studio diluito 1:100, registrato a λ 395 nm.

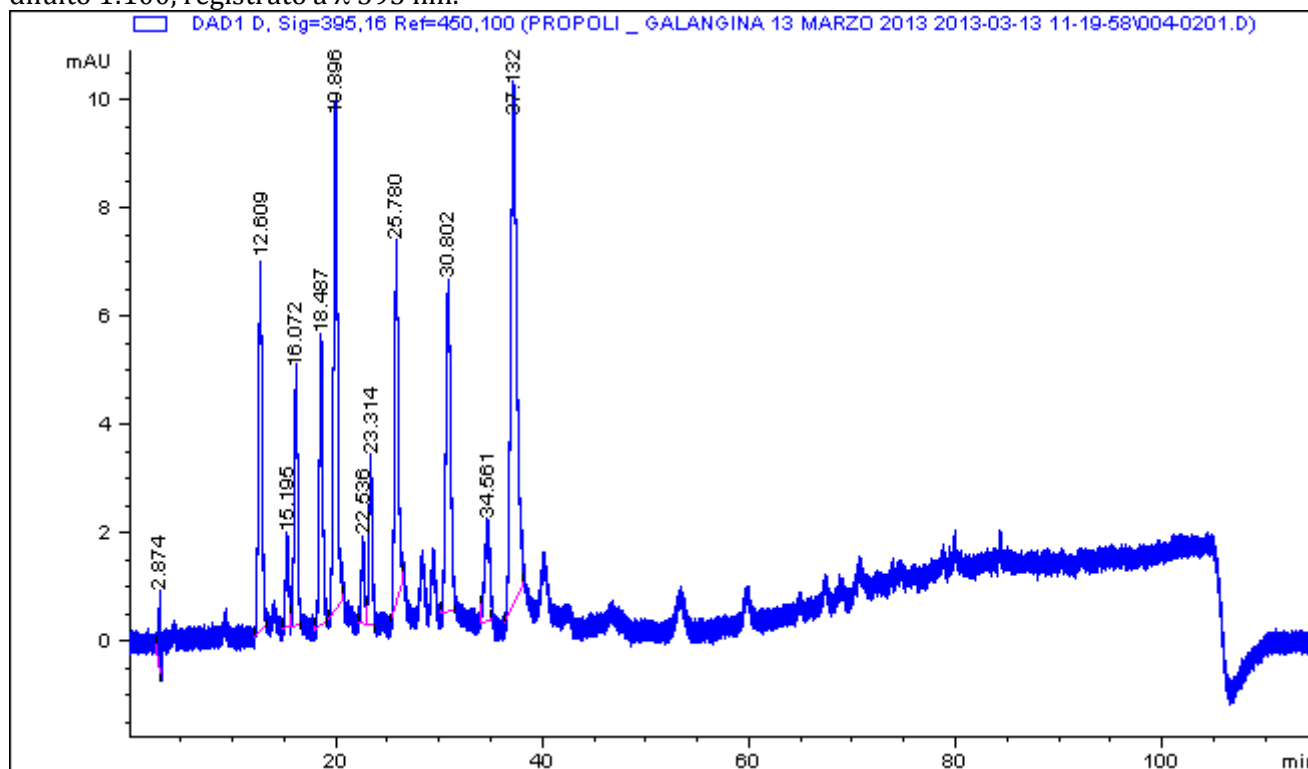
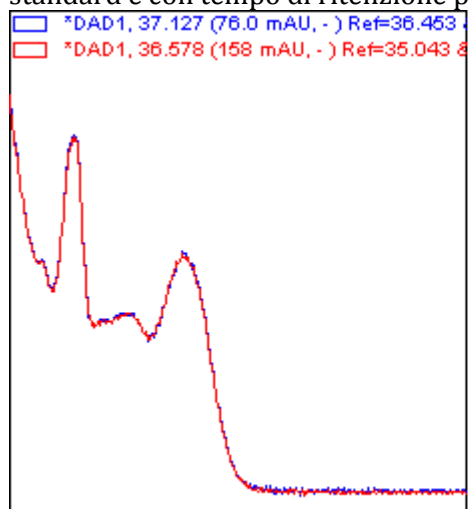


Figura 2. Spettro UV-Vis registrato per il picco con tempo di ritenzione 36,578 min della galangina standard e con tempo di ritenzione pari a 37,127 min dell'estratto di propoli diluito 1:100.



Si è pertanto proceduto al dosaggio della galangina mediante il metodo delle aggiunte di quantità note di galangina standard (corrispondenti a +50%, +75% e +100% della concentrazione iniziale dell'analita nel campione).

In tabella vengono riportati, l'intervallo di concentrazioni saggate, l'equazione della retta di regressione e il relativo coefficiente di correlazione.

Intervallo di concentrazioni $\mu\text{g/mL}$	Equazione della retta di regressione	Coefficiente di correlazione (r)
0-50 $\mu\text{g/mL}$	$y=6,1364x+283,01$	$r=0,994$

Si è proceduto quindi al calcolo della concentrazione della galangina nell'estratto di propoli:
Concentrazione di galangina: 4,612 mg/mL.



Dipartimento di Scienze del Farmaco – sede amministrativa Viale Taramelli 12 –27100 PAVIA

Tel. +39-0382-987358-7362 Fax +39-0382-422975 e-mail: emdip07@unipv.it

indirizzo web: <http://chifar.unipv.eu/site/home.html>

Sezione di Chimica e Tecnologia Farmaceutiche - Viale Taramelli 12 –27100 PAVIA

Sezione di Farmacologia - Viale Taramelli 14 –27100 PAVIA

A seguito vengono riportati anche i cromatogrammi registrati a λ 254, 270, 320 nm, indicativi del profilo cromatografico dell'estratto.

Tali cromatogrammi potranno essere utilizzati in seguito per verificare la composizione di estratti di propoli ottenuti nelle stesse condizioni dall'Azienda (Figure 5-7).

Figura 5. Cromatogramma RP-HPLC-DAD ottenuto dall'analisi dell'estratto di propoli oggetto di studio diluito 1:100, registrato a λ 254 nm.

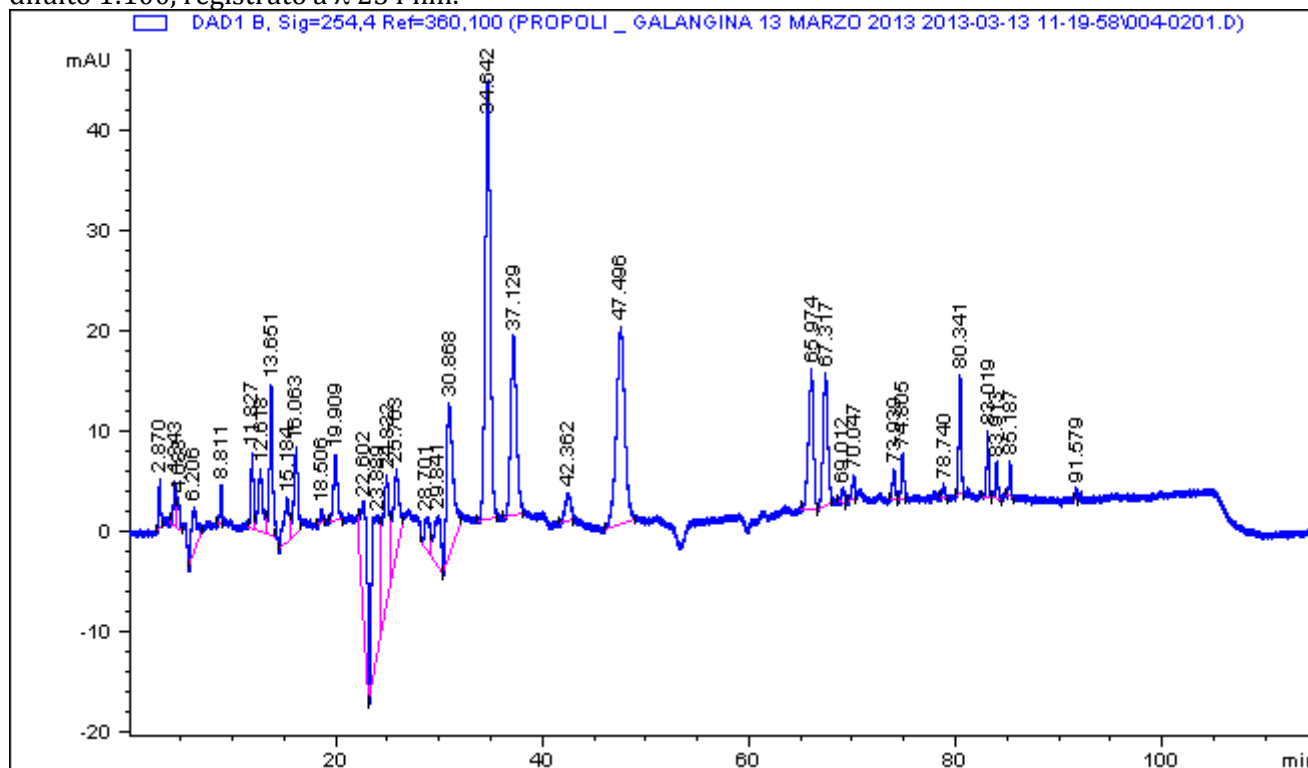


Figura 6. Cromatogramma RP-HPLC-DAD ottenuto dall'analisi dell'estratto di propoli oggetto di studio diluito 1:100, registrato a λ 270 nm.

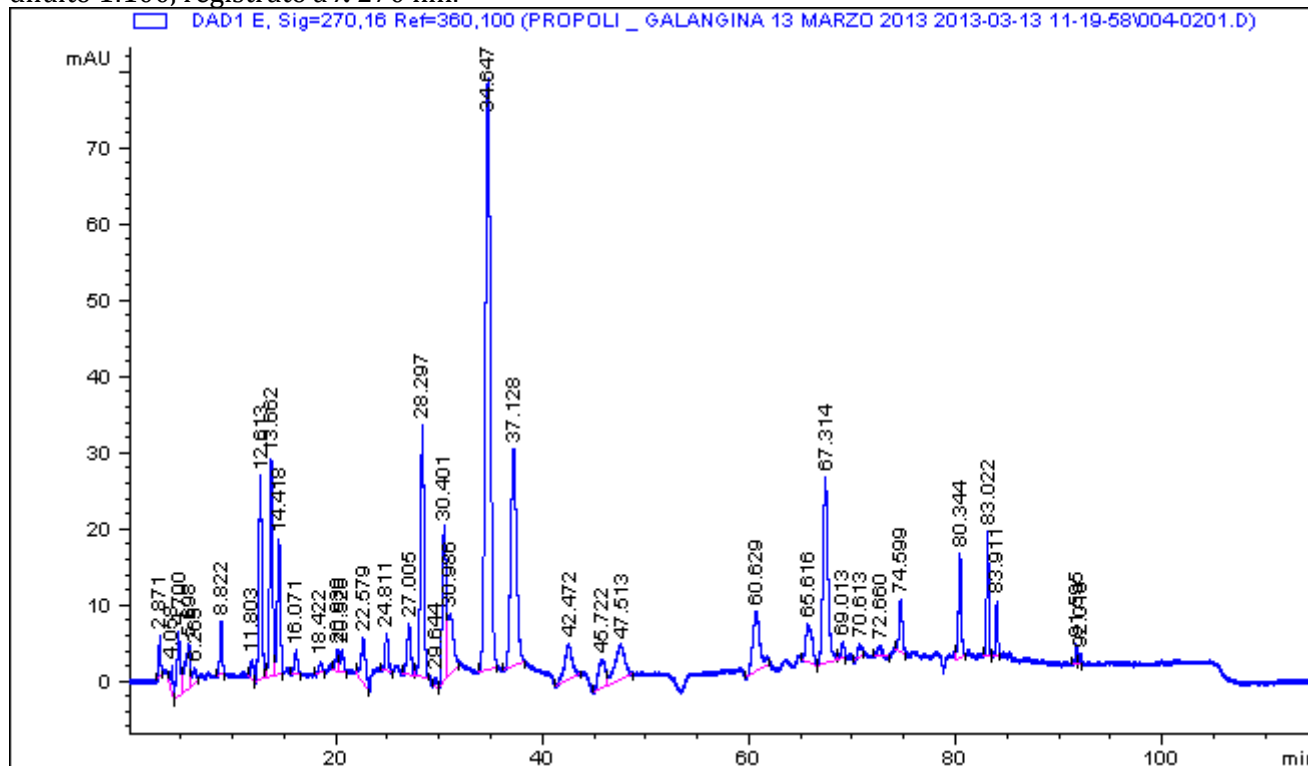
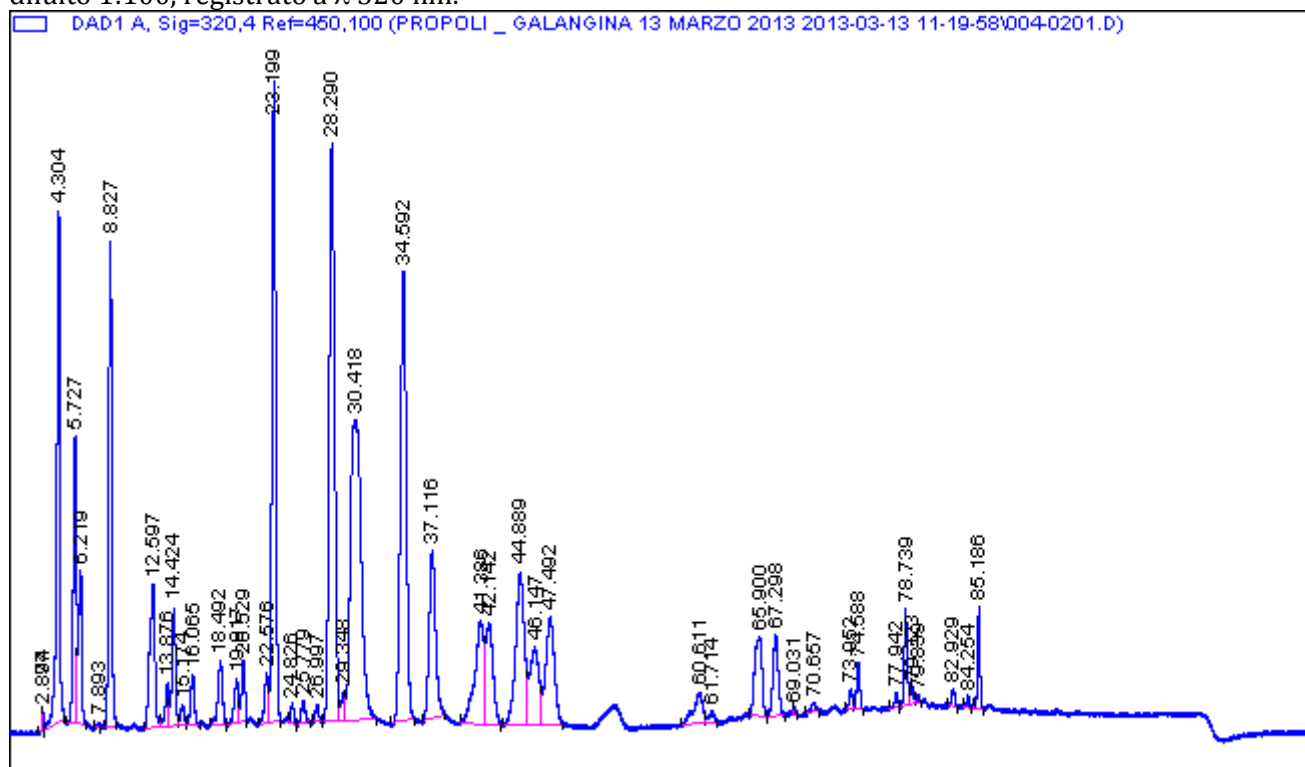


Figura 7. Cromatogramma RP-HPLC-DAD ottenuto dall'analisi dell'estratto di propoli oggetto di studio diluito 1:100, registrato a λ 320 nm.



PROPOLI

La propoli è una sostanza resinosa che le api raccolgono dalle gemme e dalla corteccia delle piante. Si tratta di una sostanza di origine completamente naturale, di colore variabile dalle tonalità del giallo, fino al rosso, al marrone e al nero e dall'odore caratteristico fortemente aromatico. Ha proprietà antibiotiche (batteriostatiche e battericide), antiinfiammatorie, antimicotiche, antiossidanti ed anti-irritanti, antivirali, anestetiche, riepitelizzanti e cicatrizzanti, antisettiche, immunostimolanti, vasoprotettive, antitumorali.

La propoli è costituita essenzialmente da resine, balsami e cere. Le principali molecole che la caratterizzano sono di natura aromatica e fenolica e tra i suoi componenti si possono riconoscere sostanze molto eterogenee fra loro come acidi grassi, terpeni, aminoacidi, vitamine, sali minerali.

La grande ricchezza di flavonoidi assicura la funzione più preziosa, quella antimicrobica. Questi sono contenuti in grande quantità nella propoli (fino al 20% del peso). L'ape modifica la struttura dei flavonoidi, originariamente presenti nelle piante, idrolizzando il legame glicosidico tra l'aglicone polifenolico e il residuo zuccherino grazie agli enzimi prodotti dalle loro ghiandole salivari. Sono inoltre presenti numerose sostanze ad azione nutritiva e funzionale:

- minerali: Mg, Ca, I, K, Na, Cu, Zn, Mn e Fe;
- vitamine: B₁ (tiamina), B₂ (riboflavina), B₆ (piridossina), C (acido ascorbico), E (tocoferolo), P (flavonoidi);
- enzimi: succinato deidrogenasi, glucosio 6-fosfatasi, fosfatasi acida;
- acidi organici: acido caffeico feniletilestere (CAPE) contenuto nelle resine e nei composti organici, fenolo, adenosintrifosfato (ATP);
- terpeni sono contenuti nelle resine e negli oli essenziali e conferiscono il caratteristico odore alla propoli;
- derivati dell'acido benzoico: acido gentisico, acido salicilico, acido protocatechico, acido-3-ossibenzoico, acido-4-ossibenzoico, acido gallico, acido-4-metossibenzoico;
- derivati dell'acido cinnamico: acido caffeico, acido ferulico, acido isoferulico, acido idrocaffeoico, acido p-cumarico, acido o-cumarico, acido m-cumarico;
- cumarine: cumarina, esculetina, scopoletina;
- alcoli: alcol benzilico, alcol cinnamilico, alcol feniletilico, alcol pentenilico, alcol 3,5-dimedossibenilico
- aldeidi: vanillina, isovanillina, aldeide cinnamica;
- flavoni: 5-idrossi-7,4'-dimetossiflavone, acacetina, apigenina-dimetiletere 7,4', crisina, pectolarigenina, tetrocrisina;
- flavonoli: 3,5,3,5-diidrossi-7,4'-imetossiflavone, betuletolo, ermanina, galangina, isalpinina, isoramnetina, kaempferide, kaempferolo, quercetin-3,3'-dimetiletere, quercetina, ramnazina, ramnetina, ramnocitrina;
- flavanoni: 5-idrossi-7,4'-dimetossiflavone, isosakuranetina, pinocembrina, pinostrobina, sakuranetina;
- diidroflavonoli: pinobaksina, pinobanksina-3-acetato;
- idrocarburi: cariofillene, α -guaiene, β -selinene;
- alcoli sesquiterpenici: β -eudesmolo, guaiolo;
- aminoacidi;
- acidi grassi;
- chetoni;
- steroli, polisaccaridi, lattoni;

L'utilizzo è indicato principalmente per combattere le infezioni dell'apparato respiratorio come raffreddore, mal di gola, influenza. La sua peculiarità è l'ampia versatilità: dalla cura dell'igiene orale, contro alito cattivo, gengiviti, infiammazioni della bocca in genere, alle

cicatrizzazioni lente e difficili da dermatiti, screpolature, foruncoli, eczemi. E' indicata anche per combattere problemi ginecologici.

Oggi la propoli viene estratta con moderne tecniche che ne assicurano la purezza, rendendola disponibile in farmacia in varie forme: soluzione idroalcolica, soluzione glicolica, capsule, collutorio, sciroppi, spray orale e nasale, unguento; utilizzata da sola o associata ad altri componenti che ne completano l'azione.

ARTICOLI DA PUB MED

Dal 2010 ad oggi sono stati pubblicati 455 articoli sulla Propoli.

Poiché i temi trattati da alcune pubblicazioni si sovrappongono, per riassumere i dati presenti in letteratura, i lavori a seguito riportati sono stati suddivisi come segue:

- 33 sulle attività funzionali
- 50 sulle attività terapeutiche
- 50 sugli effetti salutistici positivi
- 33 sull'attività antibatterica
- 13 sull'attività antivirale

PROPOLIS FUNCTIONAL ACTIVITIES

Effect of seasonality on chemical composition and antibacterial and anticandida activities of Argentine propolis. Design of a topical formulation.

Isla MI, Dantur Y, Salas A, Danert C, Zampini C, Arias M, Ordóñez R, Maldonado L, Bedascarrasbure E, Nieva Moreno MI.

Nat Prod Commun. 2012 Oct;7(10):1315-8.

Green Brazilian propolis effects on sperm count and epididymis morphology and oxidative stress.

Capucho C, Sette R, de Souza Predes F, de Castro Monteiro J, Pigoso AA, Barbieri R, Dolder MA, Severi-Aguiar GD.

Food Chem Toxicol. 2012 Nov;50(11):3956-62.

Chemical and functional characterization of Italian propolis obtained by different harvesting methods.

Papotti G, Bertelli D, Bortolotti L, Plessi M.

J Agric Food Chem. 2012 Mar 21;60(11):2852-62.

Catechols in caffeic acid phenethyl ester are essential for inhibition of TNF-mediated IP-10 expression through NF- κ B-dependent but HO-1- and p38-independent mechanisms in mouse intestinal epithelial cells.

Mapesa JO, Waldschmitt N, Schmoeller I, Blume C, Hofmann T, Mahungu S, Clavel T, Haller D.

Mol Nutr Food Res. 2011 Dec;55(12):1850-61.



Dipartimento di Scienze del Farmaco – sede amministrativa Viale Taramelli 12 –27100 PAVIA

Tel. +39-0382-987358-7362 Fax +39-0382-422975 e-mail: emdip07@unipv.it

indirizzo web: <http://chifar.unipv.eu/site/home.html>

Sezione di Chimica e Tecnologia Farmaceutiche - Viale Taramelli 12 –27100 PAVIA

Sezione di Farmacologia - Viale Taramelli 14 –27100 PAVIA

Food components with anticaries activity.

Gazzani G, Daglia M, Papetti A.

Curr Opin Biotechnol. 2012 Apr;23(2):153-9.

Chemical compositions and antioxidant activities of water extracts of Chinese propolis.

Guo X, Chen B, Luo L, Zhang X, Dai X, Gong S.

J Agric Food Chem. 2011 Dec 14;59(23):12610-6.

Chemical composition of Argentinean propolis collected in extreme regions and its relation with antimicrobial and antioxidant activities.

Vera N, Solorzano E, Ordoñez R, Maldonado L, Bedascarrasbure E, Isla MI.

Nat Prod Commun. 2011 Jun;6(6):823-7.

Caffeic acid phenethyl ester reduces spinal cord injury-evoked locomotor dysfunction.

Kasai M, Fukumitsu H, Soumiya H, Furukawa S.

Biomed Res. 2011 Feb;32(1):1-7.

Ethanol extract of chinese propolis facilitates functional recovery of locomotor activity after spinal cord injury.

Kasai M, Fukumitsu H, Soumiya H, Furukawa S.

Evid Based Complement Alternat Med. 2011;2011.

Caffeic acid phenethyl ester-mediated Nrf2 activation and IkappaB kinase inhibition are involved in NFkappaB inhibitory effect: structural analysis for NFkappaB inhibition.

Lee Y, Shin DH, Kim JH, Hong S, Choi D, Kim YJ, Kwak MK, Jung Y.

Eur J Pharmacol. 2010 Sep 15;643(1):21-8.

PROPOLIS THERAPEUTICAL ACTIVITIES

Comparative study of different Portuguese samples of propolis: pollinic, sensorial, physicochemical, microbiological characterization and antibacterial activity.

Dias LG, Pereira AP, Estevinho LM.

Food Chem Toxicol. 2012 Dec;50(12):4246-53.

7-epi-nemorosone from Clusia rosea induces apoptosis, androgen receptor down-regulation and dysregulation of PSA levels in LNCaP prostate carcinoma cells.

Díaz-Carballo D, Gustmann S, Acikelli AH, Bardenheuer W, Buehler H, Jastrow H, Ergun S, Strumberg D.

Phytomedicine. 2012 Nov 15;19(14):1298-306.

Geopropolis from Melipona scutellaris decreases the mechanical inflammatory hypernociception by inhibiting the production of IL-1 β and TNF- α .

Franchin M, da Cunha MG, Denny C, Napimoga MH, Cunha TM, Koo H, de Alencar SM, Ikegaki M, Rosalen PL.

J Ethnopharmacol. 2012 Sep 28;143(2):709-15.

Bactericidal activity of ethanolic extracts of propolis against Staphylococcus aureus isolated from mastitic cows.

Santana HF, Barbosa AA, Ferreira SO, Mantovani HC.

World J Microbiol Biotechnol. 2012 Feb;28(2):485-91.

The anticancer activity of propolis.

Sawicka D, Car H, Borawska MH, Nikliński J.

Folia Histochem Cytobiol. 2012 Apr 24;50(1):25-37.

Selective inhibition of human type-5 17 β -hydroxysteroid dehydrogenase (AKR1C3) by baccharin, a component of Brazilian propolis.

Endo S, Matsunaga T, Kanamori A, Otsuji Y, Nagai H, Sundaram K, El-Kabbani O, Toyooka N, Ohta S, Hara A.

J Nat Prod. 2012 Apr 27;75(4):716-21.

Effective neurofibromatosis therapeutics blocking the oncogenic kinase PAK1.

Maruta H.

Drug Discov Ther. 2011 Dec;5(6):266-78.

In vitro antiproliferative/cytotoxic activity on cancer cell lines of a cardanol and a cardol enriched from Thai Apis mellifera propolis.

Teerasripreecha D, Phuwapraisirisan P, Puthong S, Kimura K, Okuyama M, Mori H, Kimura A, Chanchao C.

BMC Complement Altern Med. 2012 Mar 30;12:27.

Propolis standardized extract (EPP-AF®), an innovative chemically and biologically reproducible pharmaceutical compound for treating wounds.

Berretta AA, Nascimento AP, Bueno PC, Vaz MM, Marchetti JM.

Int J Biol Sci. 2012;8(4):512-21.

Antimicrobial activity, phenolic profile and role in the inflammation of propolis.

Silva JC, Rodrigues S, Feás X, Estevinho LM.

Food Chem Toxicol. 2012 May;50(5):1790-5.

Antimicrobial activity of stingless bee (Trigona sp.) propolis used in the folk medicine of Western Maharashtra, India.

Choudhari MK, Punekar SA, Ranade RV, Paknikar KM.

J Ethnopharmacol. 2012 May 7;141(1):363-7.

Enhanced anti-diabetic activity of a combination of chromium(III) malate complex and propolis and its acute oral toxicity evaluation.

Wu XY, Li F, Zhao T, Mao GH, Li J, Qu HY, Ren YN, Yang LQ.

Biol Trace Elem Res. 2012 Jul;148(1):91-101.



Dipartimento di Scienze del Farmaco – sede amministrativa Viale Taramelli 12 –27100 PAVIA

Tel. +39-0382-987358-7362 Fax +39-0382-422975 e-mail: emdip07@unipv.it

indirizzo web: <http://chifar.unipv.eu/site/home.html>

Sezione di Chimica e Tecnologia Farmaceutiche - Viale Taramelli 12 –27100 PAVIA

Sezione di Farmacologia - Viale Taramelli 14 –27100 PAVIA

Protective effect of Brazilian propolis against hepatic oxidative damage in rats with water-immersion restraint stress.

Nakamura T, Ohta Y, Ohashi K, Ikeno K, Watanabe R, Tokunaga K, Harada N.
Phytother Res. 2012 Oct;26(10):1482-9.

Combined treatment of HEDTA and propolis prevents aluminum induced toxicity in rats.

Bhadauria M.
Food Chem Toxicol. 2012 Jul;50(7):2487-95.

Design, synthesis and evaluation of caffeic acid phenethyl ester-based inhibitors targeting a selectivity pocket in the active site of human aldo-keto reductase 1B10.

Soda M, Hu D, Endo S, Takemura M, Li J, Wada R, Ifuku S, Zhao HT, El-Kabbani O, Ohta S, Yamamura K, Toyooka N, Hara A, Matsunaga T.
Eur J Med Chem. 2012 Feb;48:321-9.

Potential utility of hyperbaric oxygen therapy and propolis in enhancing the leishmanicidal activity of glucantime.

Ayres DC, Fedele TA, Marcucci MC, Giorgio S.
Rev Inst Med Trop Sao Paulo. 2011 Nov-Dec;53(6):329-34.

A novel property of propolis (bee glue): anti-pathogenic activity by inhibition of N-acyl-homoserine lactone mediated signaling in bacteria.

Bulman Z, Le P, Hudson AO, Savka MA.
J Ethnopharmacol. 2011 Dec 8;138(3):788-97.

Anti-tumour effects of Egyptian propolis on Ehrlich ascites carcinoma.

Badr MO, Edrees NM, Abdallah AA, El-Deen NA, Neamat-Allah AN, Ismail HT.
Vet Ital. 2011 Jul-Sep;47(3):341-50.

Anti-ulcerogenic effect of aqueous propolis extract and the influence of radiation exposure.

El-Ghazaly MA, Rashed RR, Khayyal MT.
Int J Radiat Biol. 2011 Oct;87(10):1045-51.

Effect of green propolis on oral epithelial dysplasia in rats.

Cavalcante DR, Oliveira PS, Góis SM, Soares AF, Cardoso JC, Padilha FF, Albuquerque Jr RL.
Braz J Otorhinolaryngol. 2011 Jun;77(3):278-84.

Inhibition of melanogenesis by 5,7-dihydroxyflavone (chrysin) via blocking adenylyl cyclase activity.

Kim DC, Rho SH, Shin JC, Park HH, Kim D.
Biochem Biophys Res Commun. 2011 Jul 22;411(1):121-5.

Antimicrobial traits of tea- and cranberry-derived polyphenols against Streptococcus mutans.

Yoo S, Murata RM, Duarte S.
Caries Res. 2011;45(4):327-35. doi: 10.1159/000329181.

Characterisation of protease activity in extracellular products secreted by Giardia duodenalis trophozoites treated with propolis.

David EB, de Carvalho TB, Oliveira CM, Coradi ST, Sforcin JM, Guimarães S.

Nat Prod Res. 2012;26(4):370-4.

Therapeutic effects of propolis essential oil on anxiety of restraint-stressed mice.

Li YJ, Xuan HZ, Shou QY, Zhan ZG, Lu X, Hu FL.

Hum Exp Toxicol. 2012 Feb;31(2):157-65.

The effects of Brazilian and Bulgarian propolis in vitro against Salmonella Typhi and their synergism with antibiotics acting on the ribosome.

Orsi RO, Fernandes A, Bankova V, Sforcin JM.

Nat Prod Res. 2012;26(5):430-7.

Caffeic Acid Phenethyl Ester (CAPE) derived from propolis, a honeybee product, inhibits growth of breast cancer stem cells.

Omene CO, Wu J, Frenkel K.

Invest New Drugs. 2012 Aug;30(4):1279-88.

NBM-HD-3, a novel histone deacetylase inhibitor with anticancer activity through modulation of PTEN and AKT in brain cancer cells.

Huang WJ, Lin CW, Lee CY, Chi LL, Chao YC, Wang HN, Chiou BL, Chen TJ, Huang CY, Chen CN.

J Ethnopharmacol. 2011 Jun 14;136(1):156-67.

Chemical composition of the ethanolic propolis extracts and its effect on HeLa cells.

Barbarić M, Mišković K, Bojić M, Lončar MB, Smolčić-Bubalo A, Debeljak Z, Medić-Šarić M.

J Ethnopharmacol. 2011 Jun 1;135(3):772-8.

Antibacterial effects of Brazilian and Bulgarian propolis and synergistic effects with antibiotics acting on the bacterial DNA and folic acid.

Orsi RO, Fernandes A Jr, Bankova V, Sforcin JM.

Nat Prod Res. 2012;26(4):344-9.

Caffeoylquinic acids are major constituents with potent anti-influenza effects in brazilian greenpropolis water extract.

Urushisaki T, Takemura T, Tazawa S, Fukuoka M, Hosokawa-Muto J, Araki Y, Kuwata K.

Evid Based Complement Alternat Med. 2011;2011:254914.

Caffeic acid phenethyl ester reduces spinal cord injury-evoked locomotor dysfunction.

Kasai M, Fukumitsu H, Soumiya H, Furukawa S.

Biomed Res. 2011 Feb;32(1):1-7.



Dipartimento di Scienze del Farmaco – sede amministrativa Viale Taramelli 12 –27100 PAVIA

Tel. +39-0382-987358-7362 Fax +39-0382-422975 e-mail: emdip07@unipv.it

indirizzo web: <http://chifar.unipv.eu/site/home.html>

Sezione di Chimica e Tecnologia Farmaceutiche - Viale Taramelli 12 –27100 PAVIA

Sezione di Farmacologia - Viale Taramelli 14 –27100 PAVIA

Cerumen of Australian stingless bees (*Tetragonula carbonaria*): gas chromatography-mass spectrometry fingerprints and potential anti-inflammatory properties.

Massaro FC, Brooks PR, Wallace HM, Russell FD.

Naturwissenschaften. 2011 Apr;98(4):329-37.

The use of some nanoemulsions based on aqueous propolis and lycopene extract in the skin's protective mechanisms against UVA radiation.

Butnariu MV, Giuchici CV.

J Nanobiotechnology. 2011 Feb 4;9:3.

Epimedium polysaccharide and propolis flavone can synergistically inhibit the cellular infectivity of NDV and improve the curative effect of ND in chicken.

Fan Y, Liu J, Wang D, Hu Y, Yang S, Wang J, Guo L, Zhao X, Wang H, Jiang Y.

Int J Biol Macromol. 2011 Apr 1;48(3):439-44.

Cytotoxic activity of nemorosone in human MCF-7 breast cancer cells.

Popolo A, Piccinelli AL, Morello S, Sorrentino R, Osmany CR, Rastrelli L, Pinto A.

Can J Physiol Pharmacol. 2011 Jan;89(1):50-7.

Chrysin-induced apoptosis is mediated through p38 and Bax activation in B16-F1 and A375 melanoma cells.

Pichichero E, Cicconi R, Mattei M, Canini A.

Int J Oncol. 2011 Feb;38(2):473-83.

Anti-cariogenic and anti-biofilms activity of Tunisian propolis extract and its potential protective effect against cancer cells proliferation.

Kouidhi B, Zmantar T, Bakhrouf A.

Anaerobe. 2010 Dec;16(6):566-71.

The Effect of propolis on Th1/Th2 cytokine expression and production by melanoma-bearing mice submitted to stress.

Missima F, Pagliarone AC, Orsatti CL, Araújo JP Jr, Sforcin JM.

Phytother Res. 2010 Oct;24(10):1501-7.

Antiretroviral activity of two polyisoprenylated acylphloroglucinols, 7-epi-nemorosone and plukenetione A, isolated from Caribbean propolis.

Díaz-Carballo D, Ueberla K, Kleff V, Ergun S, Malak S, Freistuehler M, Somogyi S, Kücherer C, Bardenheuer W, Strumberg D.

Int J Clin Pharmacol Ther. 2010 Oct;48(10):670-7.

Astaxanthin upregulates heme oxygenase-1 expression through ERK1/2 pathway and its protective effect against beta-amyloid-induced cytotoxicity in SH-SY5Y cells.

Wang HQ, Sun XB, Xu YX, Zhao H, Zhu QY, Zhu CQ.

Brain Res. 2010 Nov 11;1360:159-67.

Wound healing properties of Indian propolis studied on excision wound-induced rats.

Iyyam Pillai S, Palsamy P, Subramanian S, Kandaswamy M.

Pharm Biol. 2010 Nov;48(11):1198-206.

The role of seasonality on the inhibitory effect of Brazilian green propolis on the oxidative metabolism of neutrophils.

Simões-Ambrosio LM, Gregório LE, Sousa JP, Figueiredo-Rinhel AS, Azzolini AE, Bastos JK, Lucisano-Valim YM.

Fitoterapia. 2010 Dec;81(8):1102-8.

Evaluation of the protective effects of Chinese herbs against biomolecule damage induced by peroxy nitrite.

Luo Y, Pan J, Pan Y, Han Z, Zhong R.

Biosci Biotechnol Biochem. 2010;74(7):1350-4.

Dentinal tubule disinfection with 2% chlorhexidine gel, propolis, morinda citrifolia juice, 2% povidone iodine, and calcium hydroxide.

Kandaswamy D, Venkateshbabu N, Gogulnath D, Kindo AJ.

Int Endod J. 2010 May;43(5):419-23.

In vitro cytotoxic activity of Baccharis dracunculifolia and propolis against HEp-2 cells.

Búfalo MC, Candeias JM, Sousa JP, Bastos JK, Sforcin JM.

Nat Prod Res. 2010 Nov;24(18):1710-8.

Antifungal activity of propolis extract against yeasts isolated from vaginal exudates.

Dalben-Dota KF, Faria MG, Bruschi ML, Pelloso SM, Lopes-Consolaro ME, Svidzinski TI.

J Altern Complement Med. 2010 Mar;16(3):285-90.

Antiproliferative activity of Greek propolis.

Pratsinis H, Kletsas D, Melliou E, Chinou I.

J Med Food. 2010 Apr;13(2):286-90.

Anti-inflammatory and antinociceptive effects of Baccharis dracunculifolia DC (Asteraceae) in different experimental models.

dos Santos DA, Fukui Mde J, Dhammika Nanayakkara NP, Khan SI, Sousa JP, Bastos JK, Andrade SF, da Silva Filho AA, Quintão NL.

J Ethnopharmacol. 2010 Feb 3;127(2):543-50.

Propolis from Turkey induces apoptosis through activating caspases in human breast carcinoma cell lines.

Seda Vatansever H, Sorkun K, Ismet Deliloğlu Gurhan S, Ozdal-Kurt F, Turkoz E, Gencay O, Salih B.

Acta Histochem. 2010 Nov;112(6):546-56.

Mechanism of herpes simplex virus type 2 suppression by propolis extracts.

Nolkemper S, Reichling J, Sensch KH, Schnitzler P.

Phytomedicine. 2010 Feb;17(2):132-8.



Dipartimento di Scienze del Farmaco – sede amministrativa Viale Taramelli 12 –27100 PAVIA

Tel. +39-0382-987358-7362 Fax +39-0382-422975 e-mail: emdip07@unipv.it

indirizzo web: <http://chifar.unipv.eu/site/home.html>

Sezione di Chimica e Tecnologia Farmaceutiche - Viale Taramelli 12 –27100 PAVIA

Sezione di Farmacologia - Viale Taramelli 14 –27100 PAVIA

PROPOLIS AND HEALTH

North American Contact Dermatitis Group Patch Test Results: 2009 to 2010.

Warshaw EM, Belsito DV, Taylor JS, Sasseville D, Dekoven JG, Zirwas MJ, Fransway AF, Mathias CG, Zug KA, Deleo VA, Fowler JF Jr, Marks JG, Pratt MD, Storrs FJ, Maibach HI.
Dermatitis. 2013 Mar;24(2):50-59.

Caffeic Acid phenethyl ester as a potential treatment for advanced prostate cancer targeting akt signaling.

Lin HP, Lin CY, Liu CC, Su LC, Huo C, Kuo YY, Tseng JC, Hsu JM, Chen CK, Chuu CP.
Int J Mol Sci. 2013 Mar 6;14(3):5264-83.

Improvement of insulin resistance, blood pressure and interstitial pH in early developmental stage of insulin resistance in OLETF rats by intake of propolis extracts.

Aoi W, Hosogi S, Niisato N, Yokoyama N, Hayata H, Miyazaki H, Kusuzaki K, Fukuda T, Fukui M, Nakamura N, Marunaka Y.
Biochem Biophys Res Commun. 2013 Feb 14.

Does propolis help to maintain oral health?

Więckiewicz W, Miernik M, Więckiewicz M, Morawiec T.
Evid Based Complement Alternat Med. 2013;2013:351062.

Brazilian green propolis: anti-inflammatory property by an immunomodulatory activity.

Machado JL, Assunção AK, da Silva MC, Dos Reis AS, Costa GC, Arruda Dde S, Rocha BA, Vaz MM, Paes AM, Guerra RN, Berretta AA, do Nascimento FR.
Evid Based Complement Alternat Med. 2012;2012:157652.

Influence of hygienic preparations with a 3% content of ethanol extract of Brazilian propolis on the state of the oral cavity.

Tanasiewicz M, Skucha-Nowak M, Dawiec M, Król W, Skaba D, Twardawa H.
Adv Clin Exp Med. 2012 Jan-Feb;21(1):81-92.

Chemical characterization, antioxidant and cytotoxic activities of Brazilian red propolis.

Frozza CO, Garcia CS, Gambato G, de Souza MD, Salvador M, Moura S, Padilha FF, Seixas FK, Collares T, Borsuk S, Dellagostin OA, Henriques JA, Roesch-Ely M.
Food Chem Toxicol. 2013 Feb;52:137-42.

Chrysin: a histone deacetylase 8 inhibitor with anticancer activity and a suitable candidate for the standardization of Chinese propolis.

Sun LP, Chen AL, Hung HC, Chien YH, Huang JS, Huang CY, Chen YW, Chen CN.
J Agric Food Chem. 2012 Nov 28;60(47):11748-58.

Artepillin C, a major ingredient of Brazilian propolis, induces a pungent taste by activating TRPA1 channels.

Hata T, Tazawa S, Ohta S, Rhyu MR, Misaka T, Ichihara K.
PLoS One. 2012;7(11):e48072.

Pinocembrin protects against β -amyloid-induced toxicity in neurons through inhibiting receptor for advanced glycation end products (RAGE)-independent signaling pathways and regulating mitochondrion-mediated apoptosis.

Liu R, Wu CX, Zhou D, Yang F, Tian S, Zhang L, Zhang TT, Du GH.
BMC Med. 2012 Sep 18;10:105.

Evaluation of the mutagenic activity of chrysin, a flavonoid inhibitor of the aromatization process.

Oliveira GA, Ferraz ER, Souza AO, Lourenço RA, Oliveira DP, Dorta DJ.
J Toxicol Environ Health A. 2012;75(16-17):1000-11.

Caffeic acid phenethyl ester protects 661W cells from H2O2-mediated cell death and enhances electroretinography response in dim-reared albino rats.

Chen H, Tran JT, Anderson RE, Mandal MN.
Mol Vis. 2012;18:1325-38. Epub 2012 May 30.

Immunostimulant effect of Egyptian propolis in rabbits.

Nassar SA, Mohamed AH, Soufy H, Nasr SM, Mahran KM.
ScientificWorldJournal. 2012;2012:901516.

Gluten screening of several dietary supplements by immunochromatographic assay.

Oancea S, Wagner A, Cîrstea E, Sima M.
Roum Arch Microbiol Immunol. 2011 Oct-Dec;70(4):174-7.

Functional foods/ingredients and dental caries.

van Loveren C, Broukal Z, Oganessian E.
Eur J Nutr. 2012 Jul;51 Suppl 2:S15-25.

Standardizing an in vitro procedure for the evaluation of the antimicrobial activity of wound dressings and the assessment of three wound dressings.

Tkachenko O, Karas JA.
J Antimicrob Chemother. 2012 Jul;67(7):1697-700.

Histopathological analysis of corticosteroid-antibiotic preparation and propolis paste formulation as intracanal medication after pulpectomy: an in vivo study.

Ramos IF, Biz MT, Paulino N, Scremin A, Della Bona A, Barletta FB, Figueiredo JA.
J Appl Oral Sci. 2012 Feb;20(1):50-6.

Plant polyphenols and oral health: old phytochemicals for new fields.

Varoni EM, Lodi G, Sardella A, Carrassi A, Iriti M.
Curr Med Chem. 2012;19(11):1706-20.



Dipartimento di Scienze del Farmaco – sede amministrativa Viale Taramelli 12 –27100 PAVIA
Tel. +39-0382-987358-7362 Fax +39-0382-422975 e-mail: emdip07@unipv.it
indirizzo web: <http://chifar.unipv.eu/site/home.html>
Sezione di Chimica e Tecnologia Farmaceutiche - Viale Taramelli 12 –27100 PAVIA
Sezione di Farmacologia - Viale Taramelli 14 –27100 PAVIA

Beneficial effects of propolis on human health and neurological diseases.

Farooqui T, Farooqui AA.

Front Biosci (Elite Ed). 2012 Jan 1;4:779-93.

Effect of Turkish propolis extracts on proteome of prostate cancer cell line.

Barlak Y, Değer O, Colak M, Karataylı SC, Bozdayı AM, Yücesan F.

Proteome Sci. 2011 Dec 7;9:74.

Herbs in dentistry.

Taheri JB, Azimi S, Rafieian N, Zanjani HA.

Int Dent J. 2011 Dec;61(6):287-96.

Effect of propolis on proliferation and apoptosis of periodontal ligament fibroblasts.

Gjertsen AW, Stothz KA, Neiva KG, Pileggi R.

Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2011 Dec;112(6):843-8.

Food components with anticaries activity.

Gazzani G, Daglia M, Papetti A.

Curr Opin Biotechnol. 2012 Apr;23(2):153-9.

Propolis mouthwash: A new beginning.

Dodwad V, Kukreja BJ.

J Indian Soc Periodontol. 2011 Apr;15(2):121-5.

[A study on release of propolis extract components from emulsion-type dispersions].

Ramanauskienė K, Zilius M, Briedis V.

Medicina (Kaunas). 2011;47(6):354-9.

Effect of propolis gel on the in vitro reduction of dentin permeability.

Sales-Peres SH, Carvalho FN, Marsicano JA, Mattos MC, Pereira JC, Forim MR, Silva MF.

J Appl Oral Sci. 2011 Aug;19(4):318-23.

¹H-NMR simultaneous identification of health-relevant compounds in propolis extracts.

Bertelli D, Papotti G, Bortolotti L, Marcazzan GL, Plessi M.

Phytochem Anal. 2012 May-Jun;23(3):260-6.

The spread of pathogens through trade in honey bees and their products (including queen bees and semen): overview and recent developments.

Mutinelli F.

Rev Sci Tech. 2011 Apr;30(1):257-71.

Anti-atherogenic and anti-angiogenic activities of polyphenols from propolis.

Daleprane JB, Freitas Vda S, Pacheco A, Rudnicki M, Faine LA, Dörr FA, Ikegaki M, Salazar LA, Ong TP, Abdalla DS.

J Nutr Biochem. 2012 Jun;23(6):557-66.

Inhibition of melanogenesis by 5,7-dihydroxyflavone (chrysin) via blocking adenylyl cyclase activity.

Kim DC, Rho SH, Shin JC, Park HH, Kim D.
Biochem Biophys Res Commun. 2011 Jul 22;411(1):121-5.

Antimicrobial traits of tea- and cranberry-derived polyphenols against Streptococcus mutans.

Yoo S, Murata RM, Duarte S.
Caries Res. 2011;45(4):327-35.

Efficacy of Brazilian Propolis against Herpes Simplex Virus Type 1 Infection in Mice and Their Modes of Antiherpetic Efficacies.

Shimizu T, Takeshita Y, Takamori Y, Kai H, Sawamura R, Yoshida H, Watanabe W, Tsutsumi A, Park YK, Yasukawa K, Matsuno K, Shiraki K, Kurokawa M.
Evid Based Complement Alternat Med. 2011;2011:976196.

Antifungal Activity of Brazilian Propolis Microparticles against Yeasts Isolated from Vulvovaginal Candidiasis.

Dota KF, Consolaro ME, Svidzinski TI, Bruschi ML.
Evid Based Complement Alternat Med. 2011;2011:201953.

Argentinean Andean propolis associated with the medicinal plant Larrea nitida Cav. (Zygophyllaceae). HPLC-MS and GC-MS characterization and antifungal activity.

Agüero MB, Svetaz L, Sánchez M, Luna L, Lima B, López ML, Zacchino S, Palermo J, Wunderlin D, Feresin GE, Tapia A.
Food Chem Toxicol. 2011 Sep;49(9):1970-8.

Alternative medicine safety: agaricus blazei and propolis.

Sorimachi K, Nakamoto T.
Comb Chem High Throughput Screen. 2011 Aug;14(7):616-21.

Chrysin suppresses mast cell-mediated allergic inflammation: involvement of calcium, caspase-1 and nuclear factor- κ B.

Bae Y, Lee S, Kim SH.
Toxicol Appl Pharmacol. 2011 Jul 1;254(1):56-64.

The effect of oral honey and pollen on postoperative intraabdominal adhesions.

Celepli S, Kismet K, Kaptanoğlu B, Erel S, Ozer S, Celepli P, Kaygusuz G, Devrim E, Gencay O, Sorkun K, Durak I, Akkuş MA.
Turk J Gastroenterol. 2011 Feb;22(1):65-72.

Effect of propolis and caffeic acid phenethyl ester (CAPE) on NF κ B activation by HTLV-1 Tax.

Shvarzbeyn J, Huleihel M.
Antiviral Res. 2011 Jun;90(3):108-15.



Dipartimento di Scienze del Farmaco – sede amministrativa Viale Taramelli 12 –27100 PAVIA
Tel. +39-0382-987358-7362 Fax +39-0382-422975 e-mail: emdip07@unipv.it
indirizzo web: <http://chifar.unipv.eu/site/home.html>
Sezione di Chimica e Tecnologia Farmaceutiche - Viale Taramelli 12 –27100 PAVIA
Sezione di Farmacologia - Viale Taramelli 14 –27100 PAVIA

A review on the dietary flavonoid kaempferol.

Calderón-Montaña JM, Burgos-Morón E, Pérez-Guerrero C, López-Lázaro M.
Mini Rev Med Chem. 2011 Apr;11(4):298-344.

Cerumen of Australian stingless bees (Tetragonula carbonaria): gas chromatography-mass spectrometry fingerprints and potential anti-inflammatory properties.

Massaro FC, Brooks PR, Wallace HM, Russell FD.
Naturwissenschaften. 2011 Apr;98(4):329-37.

Propolis: is there a potential for the development of new drugs?

Sforcin JM, Bankova V.
J Ethnopharmacol. 2011 Jan 27;133(2):253-60.

Effect of Brazilian propolis on human umbilical vein endothelial cell apoptosis.

Xuan H, Zhao J, Miao J, Li Y, Chu Y, Hu F.
Food Chem Toxicol. 2011 Jan;49(1):78-85.

Use of herbal products among 392 Italian pregnant women: focus on pregnancy outcome.

Cuzzolin L, Francini-Pesenti F, Verlato G, Joppi M, Baldelli P, Benoni G.
Pharmacoepidemiol Drug Saf. 2010 Nov;19(11):1151-8.

Phenols and antioxidant activity of hydro-alcoholic extracts of propolis from Algarve, South of Portugal.

Miguel MG, Nunes S, Dandlen SA, Cavaco AM, Antunes MD.
Food Chem Toxicol. 2010 Dec;48(12):3418-23.

Effects of propolis from different areas on mast cell degranulation and identification of the effective components in propolis.

Nakamura R, Nakamura R, Watanabe K, Oka K, Ohta S, Mishima S, Teshima R.
Int Immunopharmacol. 2010 Sep;10(9):1107-12.

Th1/Th2 cytokines' expression and production by propolis-treated mice.

Orsatti CL, Missima F, Pagliarone AC, Sforcin JM.
J Ethnopharmacol. 2010 Jun 16;129(3):314-8.

Design of natural food antioxidant ingredients through a chemometric approach.

Mendiola JA, Martín-Alvarez PJ, Señoráns FJ, Reglero G, Capodicasa A, Nazzaro F, Sada A, Cifuentes A, Ibáñez E.
J Agric Food Chem. 2010 Jan 27;58(2):787-92.

Inhibitory activity of Brazilian green propolis components and their derivatives on the release of cys-leukotrienes.

Tani H, Hasumi K, Tatefuji T, Hashimoto K, Koshino H, Takahashi S.
Bioorg Med Chem. 2010 Jan 1;18(1):151-7.

Aqueous extract of brazilian green propolis: primary components, evaluation of inflammation and wound healing by using subcutaneous implanted sponges.

de Moura SA, Negri G, Salatino A, Lima LD, Dourado LP, Mendes JB, Andrade SP, Ferreira MA, Cara DC.
Evid Based Complement Alternat Med. 2011;2011:748283.

Intestinal Anti-Inflammatory Activity of Baccharis dracunculifolia in the Trinitrobenzenesulphonic Acid Model of Rat Colitis.

Cestari SH, Bastos JK, Di Stasi LC.
Evid Based Complement Alternat Med. 2011;2011:524349.

PROPOLIS ANTIBACTERIAL ACTIVITY

Antimicrobial and antiproliferative activities of stingless bee Melipona scutellaris geopropolis.

da Cunha MG, Franchin M, Galvão L, de Ruiz A, de Carvalho JE, Ikegaki M, de Alencar SM, Koo H, Rosalen PL.
BMC Complement Altern Med. 2013 Jan 28;13:23.

Antibacterial activity of sonoran propolis and some of its constituents against clinically significant Vibrio species.

Navarro-Navarro M, Ruiz-Bustos P, Valencia D, Robles-Zepeda R, Ruiz-Bustos E, Virués C, Hernandez J, Domínguez Z, Velazquez C.
Foodborne Pathog Dis. 2013 Feb;10(2):150-8.

In vitro antimicrobial assessment of Cuban propolis extracts.

Monzote L, Cuesta-Rubio O, Campo Fernandez M, Márquez Hernandez I, Fraga J, Pérez K, Kerstens M, Maes L, Cos P.
Mem Inst Oswaldo Cruz. 2012 Dec;107(8):978-84.

Effect of seasonality on chemical composition and antibacterial and anticandida activities of Argentine propolis. Design of a topical formulation.

Isla MI, Dantur Y, Salas A, Danert C, Zampini C, Arias M, Ordóñez R, Maldonado L, Bedascarrasbure E, Nieva Moreno MI.
Nat Prod Commun. 2012 Oct;7(10):1315-8.

Chrysin: a histone deacetylase 8 inhibitor with anticancer activity and a suitable candidate for the standardization of Chinese propolis.

Sun LP, Chen AL, Hung HC, Chien YH, Huang JS, Huang CY, Chen YW, Chen CN.
J Agric Food Chem. 2012 Nov 28;60(47):11748-58.

Solophenols B-D and solomonin: new prenylated polyphenols isolated from propolis collected from the Solomon Islands and their antibacterial activity.

Inui S, Hosoya T, Shimamura Y, Masuda S, Ogawa T, Kobayashi H, Shirafuji K, Moli RT, Kozone I, Shin-ya K, Kumazawa S.
J Agric Food Chem. 2012 Nov 28;60(47):11765-70.



Dipartimento di Scienze del Farmaco – sede amministrativa Viale Taramelli 12 –27100 PAVIA
Tel. +39-0382-987358-7362 Fax +39-0382-422975 e-mail: emdip07@unipv.it
indirizzo web: <http://chifar.unipv.eu/site/home.html>
Sezione di Chimica e Tecnologia Farmaceutiche - Viale Taramelli 12 –27100 PAVIA
Sezione di Farmacologia - Viale Taramelli 14 –27100 PAVIA

Comparative study of different Portuguese samples of propolis: pollinic, sensorial, physicochemical, microbiological characterization and antibacterial activity.

Dias LG, Pereira AP, Estevinho LM.

Food Chem Toxicol. 2012 Dec;50(12):4246-53.

Chalcones in bioactive Argentine propolis collected in arid environments.

Solórzano E, Vera N, Cuello S, Ordoñez R, Zampini C, Maldonado L, Bedascarrasbure E, Isla MI.

Nat Prod Commun. 2012 Jul;7(7):879-82.

The antimicrobial effects of propolis collected in different regions in the Basque Country (Northern Spain).

Bonvehí JS, Gutiérrez AL.

World J Microbiol Biotechnol. 2012 Apr;28(4):1351-8.

Standardizing an in vitro procedure for the evaluation of the antimicrobial activity of wound dressings and the assessment of three wound dressings.

Tkachenko O, Karas JA.

J Antimicrob Chemother. 2012 Jul;67(7):1697-700.

Effects of propolis on eggshell microbial activity, hatchability, and chick performance in Japanese quail (Coturnix coturnix japonica) eggs.

Aygun A, Sert D, Copur G.

Poult Sci. 2012 Apr;91(4):1018-25.

Interactions among flavonoids of propolis affect antibacterial activity against the honeybee pathogen Paenibacillus larvae.

Mihai CM, Mărghitaş LA, Dezmirean DS, Chirilă F, Moritz RF, Schlüns H.

J Invertebr Pathol. 2012 May;110(1):68-72.

A novel property of propolis (bee glue): anti-pathogenic activity by inhibition of N-acyl-homoserine lactone mediated signaling in bacteria.

Bulman Z, Le P, Hudson AO, Savka MA.

J Ethnopharmacol. 2011 Dec 8;138(3):788-97.

Antimicrobial activity against oral pathogens and immunomodulatory effects and toxicity of geopropolis produced by the stingless bee Melipona fasciculata Smith.

Liberio SA, Pereira AL, Dutra RP, Reis AS, Araújo MJ, Mattar NS, Silva LA, Ribeiro MN, Nascimento FR, Guerra RN, Monteiro-Neto V.

BMC Complement Altern Med. 2011 Nov 4;11:108.

Comparative evaluation of propolis and triantibiotic mixture as an intracanal medicament against Enterococcus faecalis.

Madhubala MM, Srinivasan N, Ahamed S.

J Endod. 2011 Sep;37(9):1287-9.

Chemical composition of Argentinean propolis collected in extreme regions and its relation with antimicrobial and antioxidant activities.

Vera N, Solorzano E, Ordoñez R, Maldonado L, Bedascarrasbure E, Isla MI.

Nat Prod Commun. 2011 Jun;6(6):823-7.

The effects of Brazilian and Bulgarian propolis in vitro against Salmonella Typhi and their synergism with antibiotics acting on the ribosome.

Orsi RO, Fernandes A, Bankova V, Sforcin JM.

Nat Prod Res. 2012;26(5):430-7.

Protective effect of propolis against oxidative stress and immunosuppression induced by oxytetracycline in rainbow trout (Oncorhynchus mykiss, W.).

Enis Yonar M, Mişe Yonar S, Silici S.

Fish Shellfish Immunol. 2011 Aug;31(2):318-25.

In vitro antimicrobial activity of propolis, BioPure MTAD, sodium hypochlorite, and chlorhexidine on Enterococcus faecalis and Candida albicans.

Arslan S, Ozbilge H, Kaya EG, Er O.

Saudi Med J. 2011 May;32(5):479-83.

Chemical composition of the ethanolic propolis extracts and its effect on HeLa cells.

Barbarić M, Mišković K, Bojić M, Lončar MB, Smolčić-Bubalo A, Debeljak Z, Medić-Šarić M.

J Ethnopharmacol. 2011 Jun 1;135(3):772-8.

PROPOLIS ANTIVIRAL ACTIVITY

Caffeic acid phenethyl ester protects against the dopaminergic neuronal loss induced by 6-hydroxydopamine in rats.

Barros Silva R, Santos NA, Martins NM, Ferreira DA, Barbosa F Jr, Oliveira Souza VC, Kinoshita A, Baffa O, Del-Bel E, Santos AC.

Neuroscience. 2013 Mar 13;233:86-94.

Chrysin: a histone deacetylase 8 inhibitor with anticancer activity and a suitable candidate for the standardization of Chinese propolis.

Sun LP, Chen AL, Hung HC, Chien YH, Huang JS, Huang CY, Chen YW, Chen CN.

J Agric Food Chem. 2012 Nov 28;60(47):11748-58.

Effects of Brazilian green propolis on double-stranded RNA-mediated induction of interferon-inducible gene and inhibition of recruitment of polymorphonuclear cells.

Hayakari R, Matsumiya T, Xing F, Tayone JC, Dempoya J, Tatsuta T, Aizawa-Yashiro T, Imaizumi T, Yoshida H, Satoh K.

J Sci Food Agric. 2013 Feb;93(3):646-51.



Dipartimento di Scienze del Farmaco – sede amministrativa Viale Taramelli 12 –27100 PAVIA

Tel. +39-0382-987358-7362 Fax +39-0382-422975 e-mail: emdip07@unipv.it

indirizzo web: <http://chifar.unipv.eu/site/home.html>

Sezione di Chimica e Tecnologia Farmaceutiche - Viale Taramelli 12 –27100 PAVIA

Sezione di Farmacologia - Viale Taramelli 14 –27100 PAVIA

Propolis suppresses CdCl₂-induced cytotoxicity of COS7 cells through the prevention of intracellular reactive oxygen species accumulation.

Kamiya T, Izumi M, Hara H, Adachi T.

Biol Pharm Bull. 2012;35(7):1126-31.

The potential usage of caffeic acid phenethyl ester (CAPE) against chemotherapy-induced and radiotherapy-induced toxicity.

Akyol S, Ginis Z, Armutcu F, Ozturk G, Yigitoglu MR, Akyol O.

Cell Biochem Funct. 2012 Jul;30(5):438-43.

Protective effect of brown Brazilian propolis against acute vaginal lesions caused by herpes simplex virus type 2 in mice: involvement of antioxidant and anti-inflammatory mechanisms.

Sartori G, Pesarico AP, Pinton S, Dobrachinski F, Roman SS, Pauletto F, Junior LC, Prigol M.

Cell Biochem Funct. 2011 Oct 24.

[A study on release of propolis extract components from emulsion-type dispersions].

Ramanauskienė K, Zilius M, Briedis V.

Medicina (Kaunas). 2011;47(6):354-9.

Antigenotoxicity of artemisinin in vivo evaluated by the micronucleus and comet assays.

de Azevedo Bentes Monteiro Neto M, de Souza Lima IM, Furtado RA, Bastos JK, da Silva Filho AA, Tavares DC.

J Appl Toxicol. 2011 Nov;31(8):714-9.

Epimedium polysaccharide and propolis flavone can synergistically inhibit the cellular infectivity of NDV and improve the curative effect of ND in chicken.

Fan Y, Liu J, Wang D, Hu Y, Yang S, Wang J, Guo L, Zhao X, Wang H, Jiang Y.

Int J Biol Macromol. 2011 Apr 1;48(3):439-44.

Antiretroviral activity of two polyisoprenylated acylphloroglucinols, 7-epi-nemorosone and plukenetione A, isolated from Caribbean propolis.

Díaz-Carballo D, Ueberla K, Kleff V, Ergun S, Malak S, Freistuehler M, Somogyi S, Kücherer C, Bardenheuer W, Strumberg D.

Int J Clin Pharmacol Ther. 2010 Oct;48(10):670-7.

Inhibition of the Epstein-Barr virus lytic cycle by moronic acid.

Chang FR, Hsieh YC, Chang YF, Lee KH, Wu YC, Chang LK.

Antiviral Res. 2010 Mar;85(3):490-5.

Mechanism of herpes simplex virus type 2 suppression by propolis extracts.

Nolkemper S, Reichling J, Sensch KH, Schnitzler P.

Phytomedicine. 2010 Feb;17(2):132-8.

Antiviral activity and mode of action of propolis extracts and selected compounds.

Schnitzler P, Neuner A, Nolkemper S, Zundel C, Nowack H, Sensch KH, Reichling J.

Phytother Res. 2010 Jan;24 Suppl 1:S20-8.

Scheda tecnica dell'estratto di propoli fornito dall' Azienda "Dott. Stefano Faralli scarl".



Laboratorio
Dott. Stefano Faralli scarl

PROPOLI **TINTURA MADRE**

CERTIFICATO DI ANALISI E SCHEDA TECNICA **CONFORMITA' A FARMACOPEA EUROPEA 7.4** **CON METODICA ESTRATTIVA NAVIGLIO**

<u>SPECIFICHE</u>	<u>IDENTIFICAZIONE:</u>	<u>RISULTATI</u>
Denominazione	<i>Propoli</i>	
Materia prima	TINTURA MADRE	
Parte utilizzata	Resine	
Origine	Italia	
Solvente	Alcool	
 <u>SPECIFICHE</u>		
Aspetto	Liquido chiaro	
Colore	Caratteristico	
Odore	Caratteristico	
Grado alcolico	70% v/v	68° -73%v/v
Residuo secco a 105°C		
Rapporto di estrazione	1/4	
 Metalli pesanti (conforme a Reg. EC 629/2008)		
Piombo	< Max. 3.0 ppm	Max. 3.0 ppm
Cadmio	< Max. 1.0 ppm	Max. 1.0 ppm
Arsenico	< 0,00026 mg/Kg	
 Pesticidi		
Ocratossina A	Conforme	Assenti
Aflatossine B1	< 0,001mg/Kg	
Aflatossine B1,B2,G1,G2	< Max. 5ppb	Max. 5ppb
	< Max. 10ppb	Max. 10ppb
 Analisi microbiologica:		
Conta totale batteri	< 1000 ufc/g	Max. 1000 ufc/g
Lieviti e muffe	< 10 ufc/g	Max. 10 ufc/g
Streptococchi fecali	< 2 ufc/g	Max. 10 ufc/g
Stafilococco aureo	< 2 ufc/g	Max. 10 ufc/g

STOCCAGGIO: Conservare in luogo fresco e asciutto, non congelare, tenere al riparo da luce e calore.

ALLERGENI: Non contiene nessuno degli allergeni citati nella Direttiva 2003/89/CE e successivi aggiornamenti.

OGM (In accordo con Reg. 1829/2003 e N° 1830/2003): Non contiene, non deriva e non è costituito da organismi geneticamente modificati.

Codice prodotto: **LOTTO : SF1769DTG028** **Dott. STEFANO FARALLI scarl.**
Codice documento: **MC-028SP**
Prima emissione: **07/11/'12 SCADENZA 11/2017**
RESPONSABILE CONTROLLO QUALITA': DOTT. STEFANO FARALLI



Dipartimento di Scienze del Farmaco – sede amministrativa Viale Taramelli 12 –27100 PAVIA
Tel. +39-0382-987358-7362 Fax +39-0382-422975 e-mail: emdip07@unipv.it
indirizzo web: <http://chifar.unipv.eu/site/home.html>
Sezione di Chimica e Tecnologia Farmaceutiche - Viale Taramelli 12 –27100 PAVIA
Sezione di Farmacologia - Viale Taramelli 14 –27100 PAVIA