动物营养学报
CHINESE JOURNAL OF ANIMAL NUTRITION



动物营养学报 » 2012, Vol. » Issue (3) :397-405 DOI: 10.3969/j.issn.1006-267x.2012.03.002



# 唇形科植物提取物对单胃动物的抗氧化作用及其机制

史东辉[1], 陈俊锋[2], 马学会[3], 许云贺[1], 王佳丽[1]

1. 辽宁医学院畜牧兽医学院,锦州 121001;
2. 美瑞泰科/美瑞康生物科技有限公司,广州 510080;
3. 河北农业大学中兽医学院,保定 071001

# Antioxidation and Machnism of *Lamiaceae species* Extract in Monogastric Animals

SHI Donghui[1], CHEN Junfeng[2], MA Xuehui[3], XU Yunhe[1], WANG Jiali[1]

1. Institute of Animal Science and Veterinary Medicine, Liaoning Medical University, Jinzhou 121001, China;
2. Meritech/Meriden Biotech Co. Ltd. ,Guangzhou 510080, China;
3. College of Traditional Chinese Medicine, Heibei Agricultural University, Baoding 071001, China

- 摘要
- 参考文献
- 相关文章

Download: PDF (1181KB) HTML (KB) Export: BibTeX or EndNote (RIS) Supporting Info

摘要 动物在患病、应激或特殊生理条件下,机体内会大量产生自由基,自由基与机体内的脂质、DNA等产生反应,可对动物造成氧化损伤。唇形科植物提取物中的抗氧化物主要活性成分是酚类化合物,它和抗坏血酸及类胡萝卜素能够阻止自由基引发的氧化伤害。本文阐述了唇形科植物提取物对猪、鸡体外和体内抗氧化作用的实例与抗氧化功能,分析了其抗氧化作用机制。

关键词: 唇形科植物提取物 单胃动物 抗氧化作用 作用机制 自由基 氧化损伤

Abstract: Under the diseases, oxidative stress and special physiological conditions, large numbers of free radicals emerge, which leads to lipid peroxidation, enzyme inactivation and oxidative NDA damage. Some of the beneficial effects of *Lamiaceae species* extract are attributed to the presence of phenolic compounds. Phenolic compounds, ascorbic acid and carotenoid as antioxidants are considered to play an important role in scavenging the free radicals and prevention or delay of the oxidative damage caused by free radicals. This paper summarized the *in vitro* and *in vivo* studies of antioxidant activities and modes of action/functions of *Lamiaceae species* extracts in monogastric animals, and the potential antioxidant mechanism was also disscused.

Keywords: *Lamiaceae species* extract, monogastric animals, antioxidation, machnism of action, free radical, oxidative damage

收稿日期: 2011-10-24;

基金资助:辽宁省科学技术厅科学技术计划资助项目(2011211001)及横向课题研究项目基金资助

Service
- 把本文推荐给朋友
- 加入我的书架
- 加入引用管理器
- Email Alert
- RSS

作者相关文章
- 史东辉
- 陈俊锋
- 马学会
- 许云贺
- 王佳丽

引用本文:

史东辉, 陈俊锋, 马学会等 . 唇形科植物提取物对单胃动物的抗氧化作用及其机制[J]. 动物营养学报, 2012,V(3): 397-405

SHI Donghui, CHEN Junfeng, MA Xuehui etc . Antioxidation and Machnism of *Lamiaceae species* Extract in Monogastric Animals[J]. Chinese Jou of Animal Nutrition, 2012,V(3): 397-405.

链接本文:

http://118.145.16.228/Jweb_dwyy/CN/10.3969/j.issn.1006-267x.2012.03.002 或 http://118.145.16.228/Jweb_dwyy/CN/Y2012/V/I3/39

[1] VALKO M,LEIBFRITZ D,MONCOL J, et al.Free radicals and antioxidants in normal physiological functions and human disease[J].The Interna Journal of Biochemistry & Cell Biology,2007,39:44-84.

[2] HENGARTNER M O.The biochemistry of apoptosis[J].Nature,2000,407:770-776.

[3] MITTAL C K,MURAD F.Activation of guanylate cyclase by superoxide dismutase and hydroxyl radical: a physiological regulator of guanosi 5'-monophosphate formation[J].Proceedings of the National Academy of Sciences,1977,74:4360-4364.

[4] CARR A C,MCCALL M R,FREI B.Oxidation of LDL by myeloperoxidase and reactive nitrogen species:reaction pathways and antioxidant protection[J].Arteriosclerosis Thrombosis Vascular Biology,2000,20:1716-1723.

[5] STADTMAN E R.Role of oxidant species in aging[J].Current Medicinal Chemistry,2004,11:1105-1112.

[6] VALKO M,IZAKOVIC M,MAZUR M,et al.Role of oxygen radicals in DNA damage and cancer incidence[J].Molecular and Cellular Biochemistry,2004,266:37-56.

[7] CAMERON E,PAULING L.Supplemental ascorbate in the supportive treatment of cancer:prolongation of survival times in terminal human ca [J].Proceedings of the National Academy of Sciences,1976,73:3685-3689.

[8] PASTORE A,FEDERICI G,BERTINI E,et al.Analysis of glutathione:implication in redox and detoxification[J].Clinica Chimica Acta,2003,333:19

[9] SCHEEDER M R L,SPLEISS C,BOSSI H,et al.Screening of chinese herbs as antioxidants for their use in diets of farm animals［C］//Schweiz forschung begegnet hunger und armut.1.Forum für internationale landwirtschaft.Zürich,Switzerland:ETH Zürich,1999:30-33.

[10] VISIOLI F,BELLOMO G,MONTEDORO G F,et al.A low-density lipoprotein oxidation is inhibited in vitro by olive oil constituents [J].Atherosclerosis,1995,117:25-32.

[11] TSIMIDOU M,PAPADOPOULOS G, BOSKOU D.Phenolic compounds and stability of virgin olive oil-Part Ⅰ[J].Food Chemistry,1992,45(2):141 144.

[12] SAIJA A,TROMBETTA D,TOMAINO A,et al.*In vitro* evaluation of the antioxidant activity and biomembrane interaction of the plant phenols oleuropein and hydroxytyrosol[J].International Journal of Pharmaceutics,1998,166:123-133.

[13] ECONOMOU K D,OREOPOULOU V,THOMOPOLOUS C.Antioxidant properties of some plant extracts of the *Labiatae* family[J].Journal of the American Chemical Society,1991,68:109-13.

[14] 陆占国,竹内宏之.麝香草的新单萜配糖物的分离与合成[J].有机化学,2006,26(1):51-55.

[15] CAPECKA E,MARECZEK A,LEJA M.Antioxidant activity of fresh and dry herbs of some *Lamiaceae* species[J].Food Chemistry,2004,93(2):22 226.

[16] MILOS M,MASTELIC J,JERKOVIC I.Tocopherol composition and antioxidant effect of glycosidically absorption and metabolism in the chick turkey. bound volatile compounds from oregano(*Origanum vulgare* L.ssp.*hirtum*)[J].Food Control,2000,71:79-83.

[17] MILOS T,KULISIC A,RADONIC V,et al.Use of different methods for testing antioxidative activity of oregano essential oil[J].Food Chemistry,2004,85:633-640.

[18] SCHWARTZ K,ERNST H,TERNES W.Evaluation of antioxidant constituent's from thyme[J]. Journal of the Science of Food and Agriculture,1996,70:217-223.

[19] NOSTRO A,ROCCARO A S,BISIGNANO G,et al.Effects of oregano,carvacrol and thymol on *Staphylococcus aureus* and *Staphylococcus epidermidis* biofilms[J].Journal of Medical Microiology,2007,56(4):4519-4523.

[20] BARATTA M T,DORMAN H J D,DEANS S G,et al.Antimicrobial and antioxidant properties of some commercial essential oils[J].Flavour and Fragrance Journal,1998,13(4):235-244.

[21] FARAG R S,BADEI A Z M A,HEWEDI F M,et al.Antioxidant activity of some spice essential oils on linoleic acid oxidation in aqueous media [J].Journal of the American Chemical Society,1989,66:792-799.

[22] INATANI R,NAKATANI N,FUWA H,et al.Structure of a new antioxidative phenolic diterpene isolated from rosmary (*Rosmarinus officinalis* L. [J].Agricultural and Biological Chemistry,1982,46:1661-1666.

[23] 林茂,阚建全.生姜中天然抗氧化剂的应用[J].中国食品添加剂,2007,33(1):151-154.

[24] NAKATANI N.Natural antioxidants from spices //HUANG M T,HO C T,LEE C Y.Phenolic compounds in food and their effects on health Ⅱ:antioxidants and cancer prevention. :American Chemical Society,1992:72-86.

[25] 王红丽,吴铁.皮肤衰老分子生物学机制的研究进展[J].国外医学:皮肤性病学分册,2003,29(9):114-116.

[26] SLAVOMIR M,RUDOLF C,PETER P,et al.Antioxidative effect of oregano supplemented to broilers on oxidative stability of poultry meat[J].O Research Paper,2008,45(2):61-66.

[27] ROOFCHAEE A,IRANIL M,EBRAHIMZADEH M A,et al.Effect of dietaty oregano (*Origanum velgare* L.) essential oil on intestinal bacterial flo channel catfish (*Ictalures punctatus*)[J].African Journal of Biotechnology,2011,10(32):6177-6183.

[28] BOTSOGLOU N A,FLOROU-PANERI P,CHRISTAKI E,et al.Effect of dietary oregano essential oil on performance of chickens and on iron-indu lipid oxidation of breast, thigh and abdominal fat tissues[J].British Poultry Science,2002,43:223-230.

[29] LOPEZ-BOTE C J,GRAY J I,GOMAA E A,et al.Effect of dietary a dministration of oil extracts from rosemary and sage on lipid oxidation in br meat[J].British Poultry Science,1998(39):235-240.

[30] KULISIC T,RADONIC A, KATALINIC V,et al.Use of different methods for testing antioxidative activity of oregano essential oil[J].Food Chemistry,2004,85:633-640.

[31] TERENINA M B,MISHARINA T A,KRIKUNOVA N I,et al.Antioxidant properties of essential oils[J].Applied Biochemistry and Microbiology,2011,47:4445-4449.

[32] GERBER A,SALVIA O L.als Futteradditiv in der Schweinemast［D］.Ph.D Thesis.Vienna:Veterinr Medizinische University,1997.

[33] 史东辉,李轶欣,马学会,等.止痢草提取物的抗氧化作用及其对断奶仔猪生产性能影响的研究[J].中国畜牧杂志,2010,46(7):46-49.

[34] YOUDIM K A,DEANS S G.Dietary supplementation of thyme (*Thymus vulgaris* L.) essential oil during the lifetime of the rat:its effects on t antioxidant status in liver, kidney and heart tissues[J].Mechanisms of Ageing and Development,1999,109:163-175.

[35] YOUDIM K A, DEANS S G.Effect of thyme oil and thymol dietary supplementation on the antioxidant status and fatty acid composition of ageing rat brain[J].British Journal of Nutrition,2000,83:87-93.

[36] SCHULZ H,SCHULZ J M,HERRMANN M.Occurrence of hydrobenzoic acids and hydroxycinnamic acids in spices[J].Zeitschrift für Lebensmitt Untersuchung und -Forschung,1980,171:193-199.

[37] MIURA N,MIURA K,NAKATANI N.Antioxidative activity of biphenylic compounds from thyme (*Thymus vulgaris* L.)[J].Chemistry Express,198 (4):237-240.

[38] MIURA K,NAKATANI N.Antioxidative activity of flavonoids from Thyme (*Thymus vulgaris* L.)[J].Agricultural and Biological Chemistry,1989,53:3043-3045.

[39] CHUN S,VATTEM D A,LIN Y T,et al.Phenolic antioxidants from clonal oregano (*Origanum vulgare*) with antimicrobial activity against *Helicobacter pylori*[J].Process Biochemistry,2005,40:809-816.

[40] HOUGHTON P J,ZARKA R,DELASHERAS B,et al.Fixed oil of *Nigella sativa* and derived thymoquinone inhibit eico- sanoid generation in leuko and membrane lipid peroxidation[J].Planta Medica,1995,61,33-36.

[41] SUN B,BELCHIOR G. P,RICARDO-DA-SILVA J M,et al.Isolation and purification of dimeric and trimeric procyanidins from grape seeds[J].Jou Chromatography A,1999,841:115-121.

[42] AKTAR M W.Antioxidants: chemistry and their impact on health .(2008-01-30)(2011-10-19).http://www.shamskm.com/health/antioxidan chemistry-and-their-impact-on-health.html

[43] RUBERTO G,BARATTA M T.Antioxidant activity of selected essential oil components in two lipid model systems[J].Food Chemistry,2000,69 174.

[44] RHODES M J C.Physiologically active compounds in plant foods:an overview[J].Proceedings of the Nutrition Society,1996,55:371-384.

[45] HIRASA K,TAKEMASA M.Spice science technology:chemical characterization of some plants found in local accessions and used in traditio medicines in Iran[J].Journal of Agriculture and Food Chemistry,1998,50:5878-5883.

[46] HALLIWELL B.Oxygen radical,nitric oxide and human inflammatory joints disease[J].Annals of the Rheumatic Diseases,1995,54,505-510.

[47] HALLIWELL B,GUTTERIDGE J M C.Free radicals in biology and medicine[M].Oxford:Oxford University Press,1999.

[48] BORG D C.Oxygen radicals and tissue injury.A reference outline //TARR M,SAMSON F.Oxygen Free Radicals and Tissue Damage.Boston:Birkhauser,1993,12-53.

[49] 陈贵林,李建文,何洪巨.蔬菜类黄酮研究进展[J].中国食物与营养,2007,20(1):57-59.