SEAADE - IADR SEA Division 2015

26th SEAADE Annual Scientific Meeting
"ADVANCED AND INNOVATIONS IN
DENTAL EDUCATION: CURRENT CONCEPTS"

29th IADR SEA Division Annual Scientific Meeting
"IMPROVING QUALITY OF LIFE
THROUGH DENTAL RESEARCH"

PROGRAM AND ABSTRACTS BOOK

12-15th August 2015
Discovery Kartika Plaza Hotel, Bali, Indonesia

Hosted by:
SEAADE
IADR
IADR SEA Division
UNDANG-UNDANG REPUBLIK INDONESIA
NOMOR 19 TAHUN 2002
TENTANG HAK CIPTA

Pasal 2 Ayat (1)
Hak Cipta merupakan hak eksklusif bagi Pencipta atau Pemegang Hak Cipta untuk mengumumkannya atau memperbanyak Ciptaannya, yang timbul secara otomatis setelah suatu ciptaan ditahankan tanpa menguangi pembatasan menurut peraturan perundang-undangan yang berlaku.

Pasal 72 Ayat (1)
Barangsiapa dengan sengaja dan tanpa hak melakukan perbuatan sebagaimana dimaksud dalam Pasal 2 ayat (1) atau Pasal 49 ayat (1) dan ayat (2) dipidana dengan pidana penjara masa maksimal paling singkat 1 (satu) bulan dan/atau denda paling sedikit Rp 1.000.090.00 (satu ratus) dan/atau pidana penjara paling lama 7 (tujuh) tahun dan/atau denda paling banyak Rp 5.000.000.000.00 (lima miliar rupiah).

Ayat (2)
Barangsiapa dengan sengaja menyaksikan, memamerkan, mengedarkan, atau menjual kepada umum suatu Ciptaan atau barang hasil pelanggaran Hak Cipta atau Hak Terkait sebagaimana dimaksud pada ayat (1) dipidana dengan pidana penjara paling lama 5 (lima) tahun dan/atau denda paling banyak Rp 500.000.000.00 (lima ratus juta rupiah).
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WELCOMING MESSAGE

Welcoming Message by The President of IADR

I am honored to attend and meet with you at the 29th Annual Meeting of the International Association for Dental Research Southeast Asian Division (IADR SEA) Annual Meeting in Bali. The meeting’s theme, “Improving Quality of Life through Dental Research,” is an area that invites a global perspective and conversation as we seek to increase understanding of the biological, behavioral and psychosocial determinants of oral, dental — and systemic health over the life course. The theme clearly embraces the understanding of the role that dental and oral health research impacts quality of life — in totality, beyond the head and neck!

The International Association for Dental Research, with more than 11,000 global members including those who comprise the IADR-Southeast Asian Division (IADR SEA), plays an important role in the communication and application of research findings. The annual IADR meeting, IADR SEA meeting and other IADR regional, division and sectional meetings provide critical opportunities for dental and oral health researchers to disseminate their research findings and network with colleagues. Next year, I hope to welcome many of you to the IADR General Session, in Seoul, Republic of Korea, which will also be the 3rd Meeting of the IADR Asia Pacific Region!

If you cannot attend the IADR General Session, the IADR/AADR Knowledge Community provides a web-based recorded archive of presentations from past IADR annual meetings and other IADR regional and division meetings. If you have not viewed this tremendous online resource, which is free to all members, please visit the IADR web site (www.iadr.org), log in with your user name and password and highlight “Knowledge Community” under “Meetings.”

Finally, the IADR publishes journals that support the dissemination of research findings. The IADR’s flagship publication, the Journal of Dental Research, the most influential journal of dental, oral and craniofacial sciences; Advances in Dental Research (which publishes articles on significant research developments in the sciences relevant to dentistry and to the chemistry, biology, and function of the oral cavity in health and in disease) and the monthly Global Research Update are IADR member benefits at no additional cost. In addition, I am pleased to announce the launch of our new publication JDR Clinical & Translational Research (JDR-CTR) in 2016. JDR-CTR will focus on publishing dental, oral and craniofacial research findings that translate research discovery to clinical application with impacts on the oral health and functioning of individual patients and at the community levels. Please stay tuned to details of the roll out of this new exciting venture.

As we approach the IADR centennial celebration for dentistry and dental and oral health research in 2020, let us reflect on our research accomplishments and anticipate our future possibilities!

Marc W. Heft, D.M.D., M.A., Ph.D.
President, International Association for Dental Research

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<td>1Department of Microbiology and DRU on Oral Microbiology, Faculty of Dentistry, Chulalongkorn University, Bangkok, Bangkok, Thailand, 2Laboratory of Biotechnology, Chulabhorn Research Institute, Bangkok, Thailand, 3Department of Biotechnology, Mahidol University, Bangkok, Thailand</td>
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**Date:** Friday, 08/14/2015  
**Time:** 04:00 PM-05:00 PM  
**Venue:** Discovery Room 2
Objectives To describe the change in periodontal status over three years among couples in Hong Kong and to identify the baseline indicators that can predict periodontal disease progression.

Methods 354 of 432 families who participated in a baseline survey were successfully contacted and 209 families (59%) were followed up after three years. Periodontal conditions were clinically recorded; data on oral health behaviours, knowledge and attitude, dental utilization and socio-demographics were collected through questionnaire survey. Number of sextants with new/deeper pockets (NDP) for husbands and wives were computed. Zero inflated negative binomial regression and Poisson regression (both with forward selection method) were used respectively for husbands and wives to investigate the effects of baseline socio-demographics (age, household income and education), oral health behaviours (toothbrushing, flossing, use of mouthrinse, dental insurance coverage, dental visit pattern), oral health knowledge and attitude, and visual plaque level (VPI%) in predicting number of sextants with NDP.

Results 195 wives (mean age=41.1) and 156 husbands (mean age=45.5) were clinically examined. 50.3% of the wives and 62.2% of the husbands had one or more sextants with NDP, the mean numbers of sextants with NDP were 1.7 and 1.0 respectively. Significant correlation was found within couples (Pearson correlation coefficient=0.33, p<0.001). While adjusting for the socio-demographics, wives brushing less than twice daily (IRR=1.49, p=0.026) and those in middle household income group (HKD 20K-29K) when compared to the high income group (≥30K) (IRR=1.71, p=0.002) predicted more sextants with NDP. For husbands, higher baseline VPI% (IRR=1.09 for every 10% increase, p=0.021) predicted more sextants with NDP.

Conclusions The periodontal health of substantial proportion of the couples had deteriorated over three years and correlation was found within couples. Some significant baseline indicators could predict periodontal disease progression of the couples.

Antioxidant Potency of Golden Sea Cucumber Extract on Periodontitis Treatment

D. MULAWARMANTI
Oral Biology, Faculty of Dentistry, Hang Tuah University, Surabaya, East Java, Indonesia

Objectives Oxidative stress has the important role in tissue destruction of periodontitis. Catalase enzyme and heat shock protein (Hsp)-70 are involved in host response to periodontal disease. Golden sea cucumber (Sticophus hermani) extract has been known to have antioxidant components. Adjuvant treatment with antioxidant agent could be considered to attain the better result in periodontal therapy. The aim of this study was to examine the antioxidant potency of Golden Sea Cucumber extract to periodontitis by measuring the catalase activity in salivary submandibular glands and the expression of Hsp-70 in periodontal tissue of Wistar rat

Methods The study is an experimental laboratories research with post test only control group design. Twenty four male wistar rats were divided into 4 groups, each consisted of 6 rats. Control groups were given 0.2% CMC Na, were normal group and periodontitis group. Periodontitis were induced by Porphyromonas gingivalis ATCC 33277. Treatment groups were periodontitis rats which given Golden Sea Cucumber extract per oral 135mg/ kg BW once daily (PO group) and applied 0.1ml of 3% extract gel topically on gingival sulcus (TO group) once daily, in 14 consecutive days. The level of catalase were examined from salivary submandibular glands, measured its absorbance by spectrophotometer in 240 nm. Hsp-70 expression were examined from immunohistochemistry stain of periodontal tissue. Data were analyzed by Anova and Mann-Whitney test.

Results Catalase activity were decreased in periodontitis induced by P. gingivalis while Hsp-70 expression were increased (p<0.05). Sticophus hermani extract peroral and topical increased the catalase activity (p>0.05) and reduced the Hsp-70 expression (p<0.05).

Conclusions Golden Sea Cucumber have antioxidant potency in reducing Hsp-70 expression.
BACKGROUND

Oxidative stress appear a significant role in the pathology of periodontitis. The pathological events leading to the destruction of the periodontium during inflammatory periodontal diseases are involving an imbalance in oxidant and antioxidant. Catalase is an antioxidant enzyme that involved in host response to periodontal diseases. Hsp-70 plays a role in stress adaptation of periodontal tissues. HSP in the inflamed periodontal tissue due to the release of ROS and proteases. Staphylococcus husmanii extract has been known to have medical properties, and regarding to its antioxidant component, it could be explored as adjunctive antioxidant strategies periodontal therapy.

OBJECTIVE

To examine the antioxidant potency of Staphylococcus husmanii extract to periodontitis by measuring the catalase activity in submandibular glands and the expression of Hsp-70 in periodontal tissue of Wistar rats.

Catalase activity were decreased in periodontitis induced by P.gingivalis while Hsp-70 expression were increased (p<0.05). Staphylococcus husmanii extract penvoral and topical increased the catalase activity (p<0.05) and redused the Hsp-70 expression (p<0.05).

DISCUSSION

The result test of extract Staphylococcus husmanii showed antioxidant, activity. Oxidative stress have been known to play significant role in pathogenesis of periodontitis, it could be result directly from excessive ROS activity or indirectly by induced pro-inflammatory condition that lead to tissue destruction. The imbalance in the level of ROS and antioxidant play an important role in progression of periodontitis. Free radicals, such as superoxide, hydroxyl ions and nitric oxide all contain an unpaired electron. These radicals can have a negative effect on cells causing oxidative damage that leads to cell death.

The catalase decreased in the pathophysiology of periodontitis. Porphomynonas gingivalis because of damages periodontal tissue. LPS and DNA bacteria cause activation of | AP-1 | and NF-kB in gingival fibroblasts via CD14 and TLR-4 as well as the production of proinflammatory cytokines. Bacterial cell component and cytokines cause PMN recruitment. This increases ROS production and cause periodontal tissue damage. Catalase it is an antioxidant enzyme which has function as preventer antioxidant with mode of action suppressing the formation of free radical and non radical decomposition. The increased activity of catalase are expected related to the components of Staphylococcus husmanii such as vitamin A, B1, B2, B3, minerals as well as the content of phenolic components. Golden sea cucumbers are daily consumed by phytokinin which contains phenol components so that this estimated can be found on the body of the golden sea cucumber.

Hsp generated in response to microorganisms, expressed on the condition of periodontal disease. The effect of activation of Hsp 70 sub mandibular play an important role in the defense of the oral cavity, especially on some lesions on the surface of the mucosa of the oral cavity and periodontal tissue. The extract of Staphylococcus husmanii both topical and oral expression of Hsp 70 lowered significantly showed the antioxidant potential of sea cucumber extract. Hsp70 can interact directly with innate immune cells. (A) A possible mechanism of the Hsp70 action is its interaction with dendritic cells (DCs), myeloid-derived suppressor cells (MDSCs), and monocytes. Hsp70 would bind to endocytic receptors, and be endocytosed, gaining access to routes of antigen presentation, modulating the cell phenotype toward a tolerogenic one, leading to the production of the anti-inflammatory cytokine IL-10 and consequently to immunosuppression.

CONCLUSION

Staphylococcus husmanii extract has antioxidant activity that can decrease catalase and Hsp 70 in Periodontitis with Porphomynonas gingivalis-induced.

REFERENCES


Experimental laboratories research and post-test only control group design.

Analysis data - Multivariable Analysis of Variance (Manova), p < 0.05

RESULT

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>SUB MANDBULAR</th>
<th>Catalase activity (U/ml)</th>
<th>HSP 70</th>
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<tbody>
<tr>
<td>Normal</td>
<td>6.75 ± 2.062</td>
<td>439.39 ± 54.95</td>
<td></td>
</tr>
<tr>
<td>Periodontis</td>
<td>20 ± 12.80</td>
<td>334.83 ± 13.30</td>
<td></td>
</tr>
<tr>
<td>PO</td>
<td>14.71 ± 1.496</td>
<td>397.50 ± 104.24</td>
<td></td>
</tr>
<tr>
<td>TO</td>
<td>10.20 ± 1.304</td>
<td>370.56 ± 118.56</td>
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Presented at: 39th JAOR-SEA Division Annual Meeting "Improving Quality Of Life Through Dental Research" 14th-15th August 2015, Discovery Kartika Plaza Hotel, Bali, Indonesia.
ANTIOXIDANT POTENCY OF GOLDEN SEA CUCUMBER EXTRACT ON PERIODONTITIS TREATMENT

Dian Mulawarmanti
Laboratory Oral Biology
Faculty of Dentistry, Hang Tuah University

Abstract

Objective: Oxidative stress has the important role in tissue destruction of periodontitis. Catalase enzyme and heat shock protein (Hsp)-70 are involved in host response to periodontal disease. Golden sea cucumber (Sticophus hermanii) extract has been known to have antioxidant components. Adjunctive treatment with antioxidant agent could be considered to attain the better result in periodontal therapy. The aim of this study was to examine the antioxidant potency of Sticophus hermanii extract to periodontitis by measuring the catalase activity in salivary submandibular glands and the expression of Hsp-70 in periodontal tissue of Wistar rat.

Methods: The study is an experimental laboratories research with post test only control group design. Twenty four male wistar rats were divided into 4 groups, each consisted of 6 rats. Control groups were given 0.2% CMC Na, were normal group and periodontitis group. Periodontitis were induced by Porphyromonas gingivalis ATCC 33277. Treatment groups were periodontitis rats which given Sticophus hermanii extract per oral 135mg/kg BW once daily (PO group) and applied 0.1ml of 3% extract gel topically on gingival sulcus (TO group) once daily, in 14 consecutive days. The level of catalase were examined from salivary submandibular glands, measured its absorbance by spectrophotometer in 240 nm. Hsp-70 expression were examined from immunohistochemistry stain of periodontal tissue. Data were analyzed by Anova and Mann-Whitney test. Result: Catalase activity were decreased in periodontitis induced by P. gingivalis while Hsp-70 expression were increased (p<0.05). Sticophus hermanii extract peroral and topical increased the catalase activity (p>0.05) and reduced the Hsp-70 expression (p<0.05).

Conclusion: Golden sea cucumber have antioxidant potency in reducing Hsp-70 expression.

Keywords: Stichopus hermanii, catalase, HSP-70, periodontitis, porphyromonas gingivalis
Background

Chronic periodontitis is an infectious disease characterized by exaggerated inflammation, involving the release of excess proteolytic enzymes and reactive oxygen species (ROS). The gram-negative obligate anaerobe Porphyromonas gingivalis is one of the organisms most strongly associated with chronic adult periodontitis. Oxidative stress appears a significant role in the pathology of periodontitis. The pathological events leading to the destruction of the periodontium during inflammatory periodontal diseases are involving an imbalance in oxidant and antioxidant. Free radicals and reactive oxygen species (ROS) are essential to many normal biologic processes. At low concentrations, these free radicals stimulate the growth of fibroblasts and epithelial cells in culture, but at higher concentrations it may result in tissue injury.

The primary etiological agent of this inflammatory disease is a polymicrobial complex, predominantly Gram negative anaerobic or facultative bacteria within the sub-gingival biofilm. These bacterial species induce the production of cytokines such as interleukin-8 and TNF-α, further causing an increase in number and activity of polymorphonucleocytes (PMN) along with these cytokines, PMNs also produce reactive oxygen species (ROS) superoxide via the respiratory burst mechanism as the part of the defense response to infection. ROS have deleterious effects on tissue cells when produced in excess. To counter the harmful effects of ROS, human body has its own defense mechanisms to eliminate them as soon as they are formed.

Catalase is an antioxidant enzyme that involved in host response to periodontal disease. It catalyzes the decomposition of hydrogen peroxide to water and oxygen. It is a very important enzyme in protecting the cell from oxidative damage by reactive oxygen species (ROS)

HSP 70 play an important role in periodontitis and there will be an ongoing consumption of HSP in the inflamed periodontal tissue due to the release of ROS and proteases. It may also be highly important for two reasons: 1) salivary Hsp70 may play a role in the prevention of bacteri infections and maintaining mucosal and periodontal health due to a continuous unspecific defensive alert. Hsp70 as a danger signal inducing the secretion of proinflammatory cytokines (tumor necrosis factor (TNF)-α, interleukin (IL)-1β, and IL-6) monocytes and macrophages. The

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1 Presented at: 29th IADR-SEA Division Annual Meeting “Improving Quality Of Life Through Dental Research” 14th-15th August 2015, Discovery Kartika Plaza Hotel, Bal, Indonesia.
The proinflammatory effect of Hsp70 is very likely exerted on innate immune cells through the Toll/IL-1 receptor signal pathway and NF-κB. Hsp70 uses both Toll-like receptors (TLRs) for bacteria such as TLR2 (for Gram-positive) and TLR4 (for Gram-negative) and also the receptor of the α2-macroglobulin on macrophages. Another important danger signal function of uncomplexed Hsp70 is that Hsp70 also induces complement activation via an antibody-independent alternative pathway [65]. Thus, Hsp70 is able to activate both the major humoral and cellular immune responses.

Sticophus hermanii extract has been known to have medical properties, and regarding to its antioxidant component, it could be explored as adjunctive antioxidant strategies periodontal therapy.

Methods

The study is an experimental laboratories research with post test only control group design.

Sample collecting and extract preparation.

Sea cucumber *Sticophus hermanii* were collected from Sumenep coastal, immediately rinsed under running tap water, dissected to remove all visceral organs then cut into small pieces, packed and to be kept at -80 °C until further process of extraction. The small pieces bodywall cut of sea cucumber were then allowed to dry in freeze dryer machine at -85°C with 5 mTorr pressure. Freeze dried sea cucumber were crushed by a blender into powder and performed maceration by immersed with 96% ethanol for 24 hours, filtered, repeated for 3 times resulted in clear filtrate. Filtrate then being evaporated with rotary evaporator at 50°C until resulted in thick extract.

Periodontitis Induction

Periodontitis Induction were started by the administration of 0,1% chlorhexidine topically and 20 mg Kanamycin and Ampicilin/rat in the drinking water as oral preconditioning once daily for 4 consecutive days. Bacterial suspension of *P. gingivalis* ATCC 33277 containing 10⁹ CFU/ml in 2 ml PBS were inoculated by peroral administration with nasogastric tube. *P. gingivalis* suspension also swabbed in buccal/labial-palatal gingiva along molar to molar regio and anal regio. The administration of *P. gingivalis* were done 3 times in 4 days. Periodontitis condition was achieved histopathologically on 3 weeks after the bacterial induction [20] (Praptiwi, 2008) and ready for the next step of extract treatment.
DISCUSSION

The result test of extract *Sticophus hermannii* showed potential of antioxidant activity. Oxidative stress have been known to play significant role in pathogenesis of periodontitis, it could be result directly from excessive ROS activity or antioxidant deficiency or indirectly by induced pro-inflammatory condition that lead to tissue destruction. The imbalance in the level of ROS and antioxidant play an important role in progression of periodontitis. Free radicals, such as superoxide, hydroxyl ions and nitric oxide all contain an unpaired electron. These radicals can have a negative effect on cells causing oxidative damage that leads to cell death.

The catalase decreased in the pathophysiology of periodontitis, *Porphyromonas gingivalis* because of damages periodontal tissue. LPS and DNA bacteria cause activation of either activating protein - 1 (AP-1) and NFkB in gingival fibroblasts via CD14 and TLR - 4 as well as the production of proinflammatory cytokines. Bacterial cell component and cytokines cause PMN recruitment. That increases ROS production and cause periodontal tissue damage. Catalase is an antioxidant enzyme which have functions as preventive antioxidant with mode of action suppressing the formation of free radical and non radical decomposition. The increased activity of catalase are expected related to the components of Sticophus hermannii antioxidants such as vitamins A, B1, B2, B3, minerals as well as the content of phenolic components. Golden sea cucumbers are daily consumed by phytoplankton which contains phenol components so that this estimated can be found on the body of the golden sea cucumber.

Hsp generated in response to microorganisms, expressed on the condition of periodontal disease. The effect of activation of Hsp 70 sub mandibular play an important role in the defense of the oral cavity, especially on some lesions on the surface of the mucosa of the oral cavity and periodontal tissue. The extract of Sticopus Hermanii both topical and oral expression of Hsp 70 lowered significantly showed the antioxidant potential of sea cucumber extract. Hsp70 can interact directly with innate immune cells. A possible mechanism of the Hsp70 action is its interaction with dendritic cells (DCs), myeloid-derived suppressor cells (MDSCs), and monocytes. Hsp70 would bind to endocytic receptors, and be endocytosed, gaining access to routes of antigen
Extract administration

Twenty four male wistar rats age 8-10 weeks, weight 150-200 gram were divided into 4 groups, each consisted of 6 rats. Control groups were given 0.2% CMC Na, consisted of normal group and periodontitis group. Treatment groups were periodontitis rats which given Sticophus hermanii extract per oral 135mg/kg BW once daily (PO group) and applied 0.1ml of 3% extract gel topically on gingival sulcus (TO group) once daily, in 14 consecutive days.

Catalase test

Catalase activity were examined from salivary sub mandibulary and parotis glands. A hundred miligrams of each glands were crushed and mixed to 900 µl buffer fosfat at pH7 until homogen. A hundred µl of the mixture were taken and added 900 µl buffer phosphate and 1 ml H2O2 60 mN, mixed, rest for 5 minutes then measured its absorbance by spectrophotometer in 240 nm.

Results

Catalase activity was reduced on the periodontitis group on both samples of submandibula and parotis glands compare to normal control condition. After the per oral and topical treatment of Sticophus hermanii extract to the periodontitis rats, the catalase activity were increased both on samples of submandibula and parotis glands as shown on Table 1 and Fig. 1.

Table 1. Mean of catalase activity and HSP-70 of Sticophus hermanii extract to periodontitis induced by Porphyromonas gingivalis

<table>
<thead>
<tr>
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<th>Catalase activity (U/ml)</th>
<th>HSP 70</th>
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<td>Submandibular</td>
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</tbody>
</table>
presentation, modulating the cell phenotype toward a tolerogenic one, leading to the production of the anti-inflammatory cytokine IL-10 and consequently to immunosuppression\textsuperscript{3,4}
CONCLUSION
Sticophus Hermanii extract has antioxidant activity that can decrease catalase and Hsp 70 in Periodontitis with Porphyromonas gingivalis -induced

REFERENCE
Certificate of Attendance

hereby certifies that

Dian Mulawarmanti

has participated in the

29th Annual Scientific Meeting
International Association for Dental Research (IADR)
Southeast Asian Division

as

Presenter

August 14-15th, 2015
Discovery Kartika Plaza Hotel
Bali, Indonesia

Prof. Dr. Tri Erri Astoeti
Chairperson, LOC SEAIDE-IADR SEA Division 2015

Prof. Lijian Jin
President, IADR Southeast Asian Division
Indonesian Dental Association Accreditation
No. SKP-l/333/PB PDGI/VI/2015
Continuing Professional Development Credit Point for
29th Annual Scientific Meeting
International Association for Dental Research – Southeast Asian Division

Participant : 6.5 SKP / CP
Speaker (20 min – 1 hour) : 3 SKP / CP
Speaker (>1 – 2 hours) : 4 SKP / CP
Poster Presenter : 4 SKP / CP
Judges : 5 SKP / CP
Moderator : 3 SKP / CP
Committee : 3 SKP / CP

* SKP: Satuan Kredit Partisipasi
* CP: Credit Point