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1. Pasanphan, W., and Chirachanchai, S. (2007) Conjugation of gallic acid onto chitosan: an approach for green and water-based antioxidant. Carbohydrate Polymers, in press
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### Proceedings:

1. Pasanphan, W., Buettner, G.R., Chirachanchai, S. (2007, June 25-28) Chitosan Conjugated with Gallic Acid: A Novel Natural Hydrophilic Compound based Antioxidant. Proceedings of the 2<sup>th</sup> ICAPP 2007, Bangkok, Thailand.



2. Pasanphan, W., Buettner, G.R., Chirachanchai, S. (2007, October, 9-12) Galloylate chitosan: a novel chitosan derivative for green and water-based antioxidant. Proceeding of the 19<sup>th</sup> Annual Meeting of the Thai Society for Biotechnology, Bangkok, Thailand.

**Presentations:**

1. Pasanphan, W., Yoksan, R., Chirachanchai, S. (2004, October 6-7) The degradation of chitin-chitosan by gamma irradiation. Oral presented at the 30<sup>th</sup> Congress on Science and Technology of Thailand, Bangkok, Thailand.
2. Pasanphan, W., Chirachanchai. (2005, September 11-14) Immobilization of chitosan on polyethylene surface by  $\gamma$  -irradiation for ion-absorption material. Poster presented at the 19<sup>th</sup> Conference on Biomaterials, Sorrento, Italy.
3. Pasanphan, W., Buettner, G.R., and Chirachanchai, S. (2007, June 25-28) Chitosan Conjugated with Gallic Acid: A Novel Natural Hydrophilic Compound based Antioxidant. Oral presentations. Oral presented at the 2<sup>th</sup> ICAPP 2007, Bangkok, Thailand.
4. Pasanphan, W., Buettner, G.R., and Chirachanchai, S. (2007, October, 9-12) Galloylate chitosan: a novel chitosan derivative for green and water-based antioxidant. Oral presented at the 19<sup>th</sup> Annual Meeting of the Thai Society for Biotechnology, Bangkok, Thailand.

**Patent:**

1. Pasanphan, W., Chirachanchai. (2006) Development of Chitosan-Copper Based Material for Application in Breeding Inhibitor of Apple Snails. Thai Patent Application, patent pending.

**Aword:**

1. Pasanphan, W., Panha, S., Chirachanchai, S. (2007, October 4-7) Development of Chitosan-Copper based Material for Application in Breeding Inhibitor of Apple Snails. Contest at the Thailand Innovation Award 2007, Bangkok, Thailand.