**10th International Symposium on Agglomeration (Agglos10)**

September 2-4, 2013, Kobe Gakuin University Port Island Campus, Kobe, Japan

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| <Fundamental Aspects> |
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|  | Agglomeration in liquid phase (suspensions, emulsions, etc.) |
|  | Modeling and simulation in agglomeration |
|  | Agglomeration phenomena in biological system |
| <Agglomeration Process Technology> |
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|  | Compaction |
|  | Crystallization |
|  | Coating/Surface-modification |
|  | Characterization and Measurement Techniques |
|  | Scale-up |
| <Product Development> |
|  | Characterization and end-use properties |
|  | Materials for agglomeration (binders, coating agents, fillers, etc.) |
|  | Particulate design/preparation |
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Format of Abstract: One A4 page (500 words in maximum)

Font: Times New Roman, size 11,

Margin: Top= 2.5 cm, Bottom= 2.5 cm, Left= 2.5 cm, Right= 2.5 cm

1) The Abstract should be limited to the following sections:

Purpose

Methods

Results

Conclusions

2) Short specific titles should be used.

3) Underline initials and last name of the author who will present the work.

4) The abstract must be clearly typed in ENGLISH.

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The abstract form with the presenting author’s information should be sent by email to:

Prof. Hideki Ichikawa, Agglos10 Scientific Secretariat, Kobe Gakuin University, Japan

E-mail: agglos10@pharm.kobegakuin.ac.jp

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**Example of Abstract**

**Dry Particle Coating Process Using Twin-screw Continuous Kneader for Producing Controlled-release Microparticles**

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**Purpose:** To develop a dry coating technology using a twin-screw continuous kneader for producing multi-layered microparticles with controlled drug-release functions.

**Methods:** Lactose and spherical microcrystalline cellulose (CP-102, Asahi Chemical Ind.), fractionated into 106-210 μm by sieving, respectively, were used as core particles. Carbazochrome sodium sulfonate (CCSS, water-soluble model drug), lauric acid (LA, mp=44ºC, waxy binder), ethyl cellulose (EC), Eudragit RSPO were pulverized by a jet mill (Pocket Jet, Kurimoto, Ltd.). A twin-screw continuous kneader (KRC-S1, Kurimoto, Ltd.) was used for dry particle coating. A typical operating condition was as follows: screw-paddle rotation speed of 200 rpm, barrel temperature of 42.5ºC, powder feed rate of 21g/min. Layering efficiency (LE%) of LA or CCSS and coating efficiency of polymers (CE%) were determined by measuring the weight gain of each product followed by air-jet sieving (63-μm). Agglomeration (A%) was defined as a weight fraction larger than 250 μm. All polymer-coated particles were cured at 60ºC for 3h. Release studies were carried out by a paddle method in distilled water.

**Results:** By premixing core particles with 11 wt% of LA (d50=5.5 μm) and subsequent processing the premixed powders in the KRC-S1, LA-layered particles could be prepared; LE% and A% were 92 and 0.7 for CP-102 and 97 and 4.0 for lactose, respectively. No fracture of core particles was observed even after the LA-layering. Under the same procedures, 11 wt% of CCSS (d50=5 μm) could be fixed onto the LA-layered particles with LE% of 91 and A% of 5.1, indicating that the LA-layer could act as a platform for fixing the drug. Coating of the CCSS-layered particles with EC (d50=2.5 μm) was carried out under the different barrel temperatures ranging from 45 to 54ºC. The optimized barrel temperature for the polymer coating was found to be around 50ºC where CE% and A% were 93 and 3.6. Both the EC- and RSPO-coated particles showed sustained-release and sigmoid-release of CCSS, respectively. The release rate was controlled by the feed amounts of the polymers.

**Conclusions:** The results demonstrated that the present coating process would be promising for producing multi-layered, prolonged-release microparticles in a solvent-free manner.