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

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

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| <Fundamental Aspects> | |
|  | Particle-growth/Size-enlargement phenomena (granules, compacts, crystals, nanoparticles, etc.) |
|  | 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.) |
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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.

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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.