**QUALITY OVERALL SUMMARY(QOS)**

**General Instructions**

**Quality   overall   summary   (QOS)  template**   should   be   completed   for pharmaceutical products containing active substances of synthetic or semisynthetic origin and their corresponding VMPs.

All sections and fields in the QOS template that would be applicable should be completed.

It is understood that certain sections and fields may not apply and should be indicated as such by reporting “not applicable” in the appropriate area with an accompanying explanatory note.

The use of tables to summarize the information is encouraged, where possible. The tables included in the template may need to be expanded or duplicated (e.g. for multiple strengths), as necessary.

These tables are included as illustrative examples of how to summarize information. Other approaches to summarize the information can be used if they fulfill the same purpose.

Please state the exact location (Annex number) of any appended documents in the relevant sections of the form.

See sections **1.5, 3** and **4** of “Guideline on submission of documentation for registration of veterinary medicinal product (VMP): quality part” for general and detailed instructions on the completion of this template

Should you have any questions regarding this form, please contact the Rwanda FDA.

1. **Summary of product information:**

|  |  |  |  |
| --- | --- | --- | --- |
| Non-proprietary name of the veterinary medicinal product (VMP) |  | | |
| Proprietary name of the veterinary medicinal product (VMP) |  | | |
| International non-proprietary name(s) of the active pharmaceutical ingredient(s) (API(s)), including form (salt, hydrate, polymorph) |  | | |
| Applicant name and address |  | | |
| Dosage form |  | | |
| Reference Number(s) |  |  |  |
| Strength(s) |  |  |  |
| Route of administration |  | | |
| Proposed indication(s) |  | | |
| Contact information | Name:  Phone:  Fax:  Email: | | |

**2.3.S** **ACTIVE PHARMACEUTICAL INGREDIENT (API))**

Complete the following table for the option that applies for the submission of API information:

|  |  |  |
| --- | --- | --- |
| Name of API: | |  |
| Name of API manufacturer: | |  |
| □ | Full details in the PD:  • Summaries of the full information should be provided under the appropriate sections; see Section 3.2.S in the Quality guideline. | |
| □ | Certificate of suitability to the European Pharmacopoeia (CEP):   * is a written commitment provided that the applicant will inform Rwanda FDA in the event that the CEP is withdrawn and has acknowledged that withdrawal * of the CEP will require additional consideration of the API data requirements to support the dossier:   + □ yes, □ no; * a copy of the most current CEP (with annexes) and written commitment should be provided in *Module 1*; * the declaration of access should be filled out by the CEP holder on behalf of the FPP manufacturer or applicant to Rwanda FDA who refers to the CEP; and   summaries of the relevant information should be provided under the appropriate sections (e.g. S.1.3, S.3.1, S.4.1 through S.4.4, S.6 and S.7; see Quality guideline).   * . | |
| □ | Active pharmaceutical ingredient master file (APIMF):  A copy of the letter of access should be provided in *Module 1*; and summaries of the relevant information from the Open part should be provided under the appropriate sections; see Section 3.2.S in the Quality guideline | |

**2.3.S.1 General Information**

*2.3.S.1.1 Nomenclature*

1. (Recommended) International Non-proprietary name (INN):
2. Compendial name, if relevant:
3. Chemical name(s):
4. Company or laboratory code:
5. Other non-proprietary name(s) (e.g. national name, USAN, BAN):
6. Chemical Abstracts Service (CAS) registry number:

***2.3.S.1.2 Structure***

1. Structural formula, including relative and absolute stereochemistry:
2. Molecular formula:
3. Relative molecular mass:

***2.3.S.1.3 General Properties***

1. Physical description (e.g. appearance, colour, physical state):
2. Solubilities:

In common solvents:

Quantitative aqueous pH solubility profile (pH 1 to 6.8) at 370C:

|  |  |
| --- | --- |
| **Medium (e.g. pH 4.5 buffer)** | **Solubility (mg/ml)** |
| pH 1.2 |  |
| pH 4.5 |  |
| pH 6.8 |  |

Dose/solubility volume calculation:

1. (c)Physical form (e.g. polymorphic form(s), solvate, hydrate): Polymorphic form:

Solvate:

Hydrate:

1. (d) Other:

|  |  |
| --- | --- |
| **Property** |  |
| pH |  |
| pK |  |
| Partition coefficients |  |
| Melting/boiling points |  |
| Specific optical rotation  (specify solvent) |  |
| Refractive index (liquids) |  |
| Hygroscopicity |  |
| UV absorption maxima/molar absorptivity |  |
| Other |  |
|  |  |

**2.3.S.2 Manufacture**

*2.3.S.2.1 Manufacturer(s)*

1. Name, address and responsibility (e.g. fabrication, packaging, labelling, testing, storage) of each manufacturer, including contractors and each proposed production site or facility involved in these activities:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Name and address** |  | **Responsibility** | **APIMF/CEP number** | **(** |
|  | **(including block(s)/unit(s))** |  |  | **applicable)** |  |
|  |  |  |  |  |
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1. Manufacturing authorization for the production of API(s) and, where available, certificate of GMP compliance (GMP information should be provided in *Module 1*):

***2.3.S.2.2 Description of Manufacturing Process and Process Controls***

1. Flow diagram of the synthesis process(es):
2. Brief narrative description of the manufacturing process(es):
3. Alternate processes and explanation of their use:
4. Reprocessing steps and justification:

***2.3.S.2.3 Control of Materials***

1. Summary of the quality and controls of the starting materials used in the manufacture of the API:

|  |  |  |
| --- | --- | --- |
| **Step/starting material** | **Test(s)/method(s)** | **Acceptance criteria** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

(b) Name and manufacturing site address of starting material manufacturer(s):

1. Where the API(s) and the starting materials and reagents used to manufacture the API(s) are

*without* risk of transmitting agents of animal spongiform encephalopathies, a letter of attestationconfirming this can be found in:

***2.3.S.2.4 Controls of Critical Steps and Intermediates***

1. Summary of the controls performed at critical steps of the manufacturing process and on intermediates:

|  |  |  |
| --- | --- | --- |
| **Step/materials** | **Test(s)/method(s)** | **Acceptance criteria** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

***2.3.S.2.5 Process Validation and/or Evaluation***

1. Description of process validation and/or evaluation studies (e.g. for aseptic processing and sterilization):

***2.3.S.2.6 Manufacturing Process Development***

1. Description and discussion of the significant changes made to the manufacturing process and/or manufacturing site of the API used in producing comparative bioavailability or bio-waiver, stability, scale-up, pilot and, if available, production scale batches:

**2.3.S.3 Characterisation**

*2.3.S.3.1 Elucidation of Structure and other Characteristics*

1. List of studies performed (e.g. IR, UV, NMR, MS, elemental analysis) and conclusion from the studies (e.g. whether results support the proposed structure):
2. Discussion on the potential for isomerism and identification of stereochemistry (e.g. geometric isomerism, number of chiral centres and configurations) of the API batch(es) used in comparative bioavailability or biowaiver studies:
3. Summary of studies performed to identify potential polymorphic forms (including solvates):
4. Summary of studies performed to identify the particle size distribution of the API:
5. Other characteristics:

***2.3.S.3.2 Impurities***

1. Identification of potential and actual impurities arising from the synthesis, manufacture and/or degradation:
2. List of API-related impurities (e.g. starting materials, by-products,intermediates, chiral impurities, degradation products), including chemical name, structure and origin:

| **API-related impurity (chemical name or descriptor)** | **Structure** | **Origin** |
| --- | --- | --- |
|  |  |  |
|  |  |  |
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1. List of process-related impurities (e.g. residual solvents, reagents), including compound names and step used in synthesis:

|  |  |
| --- | --- |
| **Process-related impurity (compound name)** | **Step used in synthesis** |
|  |  |
|  |  |
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|  |  |

1. Basis for setting the acceptance criteria for impurities:
2. Maximum daily dose (i.e. the amount of API administered per day) for the API, corresponding to VICH Reporting/Identification/Qualification

Thresholds for the API-related impurities and the concentration limits (ppm) for the process-related impurities (e.g. residual solvents):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Maximum daily dose for the** | **<x mg/day>** |  |  |  |
| **API:** |  |  |  |  |
|  |  |  |  |  |
| **Test** | **Parameter** | **VICH** | **threshold** | **o** |
|  |  | **concentration limit** | |  |
|  |  |  |  |  |
| API-related impurities | Reporting Threshold |  |  |  |
|  |  |  |  |  |
|  | Identification Threshold |  |  |  |
|  |  |  |  |  |
|  | Qualification Threshold |  |  |  |
|  |  |  |  |  |
| Process-related impurities | <solvent 1> |  |  |  |
|  |  |  |  |  |
|  | <solvent 2>, etc. |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. Data on observed impurities for relevant batches (e.g. comparative bioavailability or biowaiver, stability batches):

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Impurity** |  |  | **Acceptance** | **Results (include batch number\* and use\*\*)** | | |
|  | **(API-related** | **an** |  | **Criteria** |  |  |  |
|  |  |  |  |  |
|  | **process-related)** |  |  |  |  |  |  |
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\*include strength, if reporting impurity levels found in the FPP (e.g. for comparative studies)

\*\*e.g. comparative bioavailability or bio-waiver studies, stability

1. Justification of proposed acceptance criteria for impurities:

**2.3.S.4 Control of the API**

*2.3.S.4.1 Specification*

1. API specifications *of the FPP manufacturer*:

|  |  |  |
| --- | --- | --- |
| **Standard (e.g. Ph.Int., Ph.Eur., BP, USP, House)** | |  |
|  |  |  |
| **Specification reference number and version** | |  |
|  |  |  |
| **Test** | **Acceptance criteria** | **Analytical procedure** |
|  |  | **(Type/Source/Version)** |
|  |  |  |
| Description |  |  |
|  |  |  |
| Identification |  |  |
|  |  |  |
| Impurities |  |  |
|  |  |  |
| Assay |  |  |
|  |  |  |
| etc. |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| ***2.3.S.4.2 Analytical Procedures*** | |  |

-Summary of the analytical procedures (e.g. key method parameters, conditions, system suitability testing):

***2.3.S.4.3 Validation of Analytical Procedures***

1. Summary of the validation information (e.g. validation parameters and results for non-compendia methods):
2. Summary of verification information on compendia methods

***2.3.S.4.4 Batch Analyses***

1. Description of the batches:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Batch number** | **Batch size** |  | **Date and** | **Use** | **(e.g.** | **comparati** |
|  |  |  | **site of production** | **bioavailability** | | **or biowaive** |
|  |  |  |  |  |  |
|  |  |  |  | **stability)** | |  |
|  |  |  |  |  |  |  |
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1. Summary of batch analyses release results *of the FPP manufacturer* for relevant batches (e.g. comparative bioavailability or bio-waiver, stability):

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test** |  | **Acceptance** | **Results** |  |  |
|  |  | **Criteria** |  |  |  |
|  |  | **<batch x>** | **<batch y>** | **etc.** |
|  |  |  |  |  |  |
| Description |  |  |  |  |  |
|  |  |  |  |  |  |
| Identification |  |  |  |  |  |
|  |  |  |  |  |  |
| Impurities |  |  |  |  |  |
|  |  |  |  |  |  |
| Assay |  |  |  |  |  |
|  |  |  |  |  |  |
| etc. |  |  |  |  |  |
|  |  |  |  |  |  |

1. Summary of analytical procedures and validation information for those

procedures not previously summarized in 2.3.S.4.2 and 2.3.S.4.3 (e.g. historical analytical procedures):

***2.3.S.4.5 Justification of Specification***

Justification of the API specification (e.g. evolution of tests, analytical procedures and acceptance criteria, differences from officially recognized compendial standard(s)):

**2.3.S.5 Reference Standards or Materials**

1. Source (including lot number) of primary reference standards or reference materials (e.g. Ph.Int., Ph.Eur., BP, USP, in-house):
2. Characterization and evaluation of non-official (e.g. not from an officially recognized pharmacopoeia) primary reference standards or reference materials (e.g. elucidation of structure, certificate of analysis):
3. Description of the process controls of the secondary reference standard (comparative certificate of analysis and IR spectra against primary standard) :

**2.3.S.6 Container Closure System**

1. Description of the container closure system(s) for the shipment and storage of the API (including the identity of materials of construction of each primary packaging component and a brief summary of the specifications):

| **Packaging component** | **Materials of construction** | **Specifications (list parameters e.g. identification (IR))** |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

1. Other information on the container closure system(s) (e.g. suitability studies):

**2.3.S.7 Stability**

*2.3.S.7.1 Stability Summary and Conclusions*

1. Summary of stress testing (e.g. heat, humidity, oxidation, photolysis, and acid/base): and results:

|  |  |  |
| --- | --- | --- |
| **Stress condition** | **Treatment** | **Results (e.g. including discussion whether mas** |
|  |  | **balance is observed)** |
|  |  |  |
| Heat |  |  |
|  |  |  |
| Humidity |  |  |
|  |  |  |
| Oxidation |  |  |
|  |  |  |
| Photolysis |  |  |
|  |  |  |
| Acid |  |  |
| Base |  |  |
| Other |  |  |

1. **Summary of accelerated and long-term testing parameters (e.g. studies conducted):**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Storage condition** |  | **Batch** |  | **Batch** |  | **Container** | **closure** | **Completed** | **(an** |
|  | **(◦C, % RH)** |  | **number** |  | **size** |  | **system** |  | **proposed)** | **testin** |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | **intervals** |  |
|  |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |

Summary of the stability results observed for the above accelerated and long-term studies:

| **Test** | **Results** |
| --- | --- |
| Description |  |
| Moisture |  |
| Impurities |  |
| Assay |  |
| etc. |  |
|  |  |

1. Proposed storage statement and re-test period (or shelf-life, as appropriate):

|  |  |  |
| --- | --- | --- |
| **Container closure system** | **Storage statement** | **Re-test period\*** |
|  |  |  |
|  |  |  |

\* Indicate if a shelf-life is proposed in lieu of a re-test period (e.g. in the case of labile APIs)

***2.3.S.7.2 Post-approval Stability Protocol and Stability Commitment***

1. Stability protocol for *Primary stability batches* (e.g. storage conditions (including tolerances), batch numbers and batch sizes, tests and acceptance criteria, testing frequency, container closure system(s)):

| **Parameter** | **Details** | |
| --- | --- | --- |
| Storage condition(s) (◦C, % RH) |  | |
| Batch number(s) / batch size(s) |  | |
| Tests and acceptance criteria | Description |  |
| Moisture |  |
| Impurities |  |
| Assay |  |
| etc. |  |
|  |  |
| Testing frequency |  | |
| Container closure system(s) |  | |
|  |  | |

1. Stability protocol for *Commitment batches* (e.g. storage conditions (including tolerances), batch numbers (if known) and batch sizes, tests and acceptance criteria, testing frequency, container closure system(s)):

| **Parameter** | **Details** | |
| --- | --- | --- |
| Storage condition(s) (◦C, % RH) |  | |
| Batch number(s) / batch  size(s) | *<not less than three production batches>* | |
| Tests and acceptance criteria | Description |  |
| Moisture |  |
| Impurities |  |
| Assay |  |
| etc. |  |
|  |  |
| Testing frequency |  | |
| Container closure system(s) |  | |
|  |  | |

1. Stability protocol for Ongoing batches (e.g. storage conditions (including tolerances), batch sizes and annual allocation, tests and acceptance criteria, testing frequency, container closure system(s)):

| **Parameter** | **Details** | |
| --- | --- | --- |
| Storage condition(s) (◦C, % RH) |  | |
| Annual allocation | *<at least one production batch per year (unless none is produced that year)in each container closure system >* | |
| Tests and acceptance criteria | Description |  |
| Moisture |  |
| Impurities |  |
| Assay |  |
| etc. |  |
|  |  |
| Testing frequency |  | |
| Container closure system(s) |  | |
|  |  | |

***2.3.S.7.3 Stability Data***

1. The actual stability results should be provided in *Module 3*.
2. Summary of analytical procedures and validation information for those procedures not previously summarized in 2.3.S.4 (e.g. analytical procedures used only for stability studies):

**2.3.P VETERINARY MEDICINAL PRODUCT (VMP)**

2.3.P.1 Description and Composition of the VMP

1. Description of the VMP:
2. Composition of the VMP:
3. Composition, i.e. list of all components of the VMP and their amounts on a per unit basis and percentage basis (including individual components of mixtures prepared in-house (e.g. coatings) and overages, if any):

| **Component and quality standard (and grade, if applicable)** | **Function** | **Strength (label claim)** | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | |  | | |  | | |
| **Quant. per unit** | | **%** | **Quant. per unit** | | **%** | **Quantity per unit** | | **%** |
| <complete with appropriate title e.g. Core tablet, Contents of capsule, Powder for injection> | | | | | | | | | | |
|  |  |  |  | |  |  | |  |  | |
|  |  |  |  | |  |  | |  |  | |
| Subtotal 1 |  |  |  | |  |  | |  |  | |
| <complete with appropriate title e.g. Film-coating > | | | | | | | | | | |
|  |  |  |  | |  |  | |  |  | |
|  |  |  |  | |  |  | |  |  | |
| Subtotal 2 |  |  |  | |  |  | |  |  | |
| Total |  |  |  | |  |  | |  |  | |

ii

1. Composition of all *components purchased as mixtures* (e.g. colourants, coatings, capsule shells, imprinting inks):
2. Description of accompanying reconstitution diluent(s), if applicable:
3. Type of container closure system used for the FPP and accompanying reconstitution diluent, if applicable:

**2.3.P.2 Pharmaceutical Development**

*2.3.P.2.1 Components of the VMP*

*2.3.P.2.1.1 Active Pharmaceutical Ingredient*

1. Discussion of the:
2. compatibility of the API(s) with excipients listed in 2.3.P.1:
3. key physicochemical characteristics (e.g. water content,
4. solubility, particle size distribution, polymorphic or solid state form) of the API(s) that can influence the performance of the FPP:
5. for fixed-dose combinations, compatibility of APIs with each other:

***2.3.P.2.1.2 Excipients***

1. Discussion of the choice of excipients listed in 2.3.P.1 (e.g. their concentrations, their characteristics that can influence the FPP performance):

***2.3.P.2.2 Veterinary medicinal Product***

*2.3.P.2.2.1 Formulation Development*

1. Summary describing the development of the VMP (e.g. route of administration, usage, optimization of the formulation, etc.):
2. Information on primary (submission, registration, exhibit) batches including comparative bioavailability or bio-waiver, stability, commercial:
3. Summary of batch numbers:

|  |  |  |  |
| --- | --- | --- | --- |
| **Batch number(s) of the VMPs used in** | | | |
| **Bioequivalence or biowaiver** |  | | |
| **Dissolution profile studies** |  | | |
| **Stability studies (primary batches)** | | | |
| ‹packaging configuration I› |  |  |  |
| ‹ packaging configuration II› |  |  |  |
| ‹*Add/delete as many rows as necessary*› |  |  |  |
| **Stability studies (production batches)** | | | |
| ‹ packaging configuration I› |  |  |  |
| ‹ packaging configuration II› |  |  |  |
| *(Add/delete as many rows as necessary)* |  |  |  |
| **Validation studies (primary batches) if available** | | | |
| ‹ packaging configuration I› |  |  |  |
| ‹ packaging configuration II› |  |  |  |
| *(Add/delete as many rows as necessary)* |  |  |  |
| **Validation studies (at least the first three consecutive production batches)**  **or code(s)/version(s) for process validation protocol(s)** |  |  |  |

ii Summary of formulations and discussion of any differences:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Component** | | **an** |  | **Relevant batches** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | |  |  |  | |  |
|  | **quality** | **standa** | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | **Comparative** | | |  |  | **Stability** | |  |  |  |  | **Process validation** | | | | |  | **Commercial** | | | |
|  | **(e.g.** | **NF,** | **B** |  | **bioavailability** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **(2.3.P.1)** | |  |  |
|  | **Ph.Eur, in-house** | | |  | **or biowaiver** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | **<Batch** | **nos.** | | **an** |  | **<Batch** | | **nos.** | | **an** |  | **<Batch** | | **nos.** | | **an** |  | **<Batch** | | **nos. an** | |
|  |  |  |  |  | **sizes>** |  |  |  |  | **sizes>** | |  |  |  |  | **sizes>** | |  |  |  |  | **sizes>** | |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | **Theor.** |  | **%** |  |  | **Theor.** | |  | **%** |  |  | **Theor.** | |  | **%** |  |  | **Theor.** | |  | **%** |
|  |  |  |  |  | **quantity** |  |  |  |  | **quantity** | | **p** |  |  |  | **quantity** | | **p** |  |  |  | **quantity** | | **p** |  |
|  |  |  |  |  | **per batch** |  |  |  |  | **batch** | |  |  |  |  | **batch** | |  |  |  |  | **batch** | |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <complete with appropriate title e.g. Core tablet, Contents of capsule, Powder | | | | | | | | | | | | | | | | | | | | | | | |  |  |
| for injection> | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Subtotal 1 | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | | | |  | |  | | |  |  |  | | |  |  |  |  |  |  |  |  |  |  |  |  |
| <complete with appropriate title e.g. Film-coating > | | | | | | | | | | | | | |  |  |  |  |  |  |  |  |  |  |  |  |
|  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Subtotal 2 | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Total |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

1. Description of batches used in the comparative in vitro studies (e.g. dissolution) and in the in vivo studies (e.g. comparative bioavailability or biowaiver), including strength, batch number, type of study and reference to the data (volume, page):
2. Summary of results for comparative in vitro studies (e.g. dissolution)
3. Summary of any information on in vitro-in vivo correlation (IVIVC) studies (with cross-reference to the studies in Module 5):
4. For scored tablets, provide the rationale/justification for scoring:

***2.3.P.2.2.2 Overages***

(a) Justification of overages in the formulation(s) described in 2.3.P.1:

***2.3.P.2.2.3 Physicochemical and Biological Properties***

(a) Discussion of the parameters relevant to the performance of the FPP

(e.g. pH, ionic strength, dissolution, particle size distribution, polymorphism, rheological properties):

***2.3.P.2.3 Manufacturing Process Development***

1. Discussion of the development of the manufacturing process of the VMP (e.g. optimization of the process, selection of the method of sterilization):
2. Discussion of the differences in the manufacturing process(es) for the batches used in the comparative bioavailability or biowaiver studies and the process described in 2.3.P.3.3:

***2.3.P.2.4 Container Closure System***

1. Discussion of the suitability of the container closure system (described in 2.3.P.7) used for the storage, transportation (shipping) and use of the VMP (e.g. choice of materials, protection from moisture and light, compatibility of the materials with the VMP):
2. For a device accompanying a multi-dose container, a summary of the study results demonstrating the reproducibility of the device (e.g. consistent delivery of the intended volume):

***2.3.P.2.5 Microbiological Attributes***

1. Discussion of microbiological attributes of the VMP (e.g. preservative effectiveness studies):

***2.3.P.2.6 Compatibility***

1. Discussion of the compatibility of the VMP (e.g. with reconstitution diluent(s) or dosage devices, co-administered VMPs):

**2.3.P.3 Manufacture**

*2.3.P.3.1 Manufacturer(s)*

1. Name, address and responsibility (e.g. fabrication, packaging, labelling, testing) of each manufacturer, including contractors and each proposed production site or facility involved in manufacturing and testing:

|  |  |
| --- | --- |
| **Name and address** | **Responsibility** |
| **(include block(s)/unit(s))** |  |
|  |  |
|  |  |
|  |  |

***2.3.P.3.2 Batch Formula***

1. List of all components of the VMP to be used in the manufacturing process and their amounts on a per batch basis (including individual components of mixtures prepared in-house (e.g. coatings) and overages, if any):

| **Strength (label claim)** | |  |  | |  | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Master production document**  **reference number and/or version** | |  |  | |  | | |
| **Proposed commercial batch size(s) (e.g. number of dosage units)** | |  |  | |  | | |
| **Component and quality**  **Standard (and grade, if applicable)** | | **Quantity per batch (e.g. kg/batch)** | **Quantity per batch (e.g. kg/batch)** | | **Quantity per batch (e.g. kg/batch)** | | |
| <complete with appropriate title e.g. Core tablet, Contents of capsule, Powder for injection> | | | | | | | |
|  | |  |  | |  | | |
|  | |  |  | |  | | |
| Subtotal 1 | |  |  | |  | | |
| <complete with appropriate title e.g. Film-coating> | | | | | | | |
|  | |  |  | |  | | |
|  | |  |  | |  | | |
| Subtotal 2 | |  |  | |  | | |
| Total | |  |  | |  | | |
| ***2.3.P.3.3 Description of Manufacturing Process and Process Controls*** | | |  | |  |  | |

1. Flow diagram of the manufacturing process:
2. Narrative description of the manufacturing process, including equipment type and working capacity, process parameters:
3. Justification of reprocessing of materials:

***2.3.P.3.4 Controls of Critical Steps and Intermediates***

| **Step**  **(e.g. granulation, compression, coating)** | **Controls** |
| --- | --- |
|  |  |
|  |  |

***2.3.P.3.5 Process Validation and/or Evaluation***

1. Summary of the process validation and/or evaluation studies conducted (including product quality review(s) where relevant) and/or a summary of the proposed process validation protocol for the critical steps or critical assays used in the manufacturing process (e.g. protocol number, parameters, results):

**2.3.P.4 Control of Excipients**

*2.3.P.4.1 Specifications*

1. Summary of the specifications for officially recognized compendial excipients which include supplementary tests not included in the officially recognized compendial monograph(s):

***2.3.P.4.2 Analytical Procedures***

1. Summary of the analytical procedures for supplementary tests:

***2.3.P.4.3 Validation of Analytical Procedures***

1. Summary of the validation information for the analytical procedures for supplementary tests (where applicable):

***2.3.P.4.4 Justification of Specifications***

1. Justification of the specifications (e.g. evolution of tests, analytical procedures and acceptance criteria, exclusion of certain tests, differences from officially recognized compendial standard(s)):

***2.3.P.4.5 Excipients of Human or Animal Origin***

1. For VMPs using excipients without risk of transmitting agents of animal spongiform encephalopathies, a letter of attestation confirming this can be found in: (page and volume)
2. CEP(s) demonstrating TSE-compliance can be found in: (page and volume)

***2.3.P.4.6 Novel Excipients***

For excipient(s) used for the first time in an VMP or by a new route of administration, full details of manufacture, characterization and controls, with cross references to supporting safety data (nonclinical and/or clinical), should be provided according to the API and/or VMP format

**2.3.P.5 Control of VMP**

***2.3.P.5.1 Specification(s)***

Specification(s) for the VMP:

|  |  |  |  |
| --- | --- | --- | --- |
| **Standard (e.g. Ph.Int., BP, USP, House)** | |  |  |
|  |  |  |  |
| **Specification reference number and version** | |  |  |
|  |  |  |  |
| **Test** | **Acceptance criteria** | **Acceptance criteria** | **Analytical procedure** |
|  | **(release)** | **(shelf-life)** | **(type/source/version)** |
|  |  |  |  |
| Description |  |  |  |
|  |  |  |  |
| Identification |  |  |  |
|  |  |  |  |
| Impurities |  |  |  |
|  |  |  |  |
| Assay |  |  |  |
|  |  |  |  |
| etc. |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| ***2.3.P.5.2 Analytical Procedures*** | |  |  |

1. Summary of the analytical procedures (e.g. key method parameters, conditions, system suitability testing):

***2.3.P.5.3 Validation of Analytical Procedures***

1. Summary of the validation information (e.g. validation parameters and results):

***2.3.P.5.4 Batch Analyses***

1. Description of the batches:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Strength and** | **Batch size** |  | **Date and** | **Use** | **(e.g.** | **comparati** |
|  | **batch number** |  |  | **site of production** | **bioavailability** | | **or biowaive** |
|  |  |  |  |  |  |
|  |  |  |  |  | **stability)** |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

1. Summary of batch analyses release results for relevant batches (e.g. comparative bioavailability or biowaiver, stability):

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test** |  | **Acceptance** | **Results** |  |  |
|  |  | **criteria** |  |  |  |
|  |  | **<batch x>** | **<batch y>** | **etc.** |
|  |  |  |  |  |  |
| Description |  |  |  |  |  |
|  |  |  |  |  |  |
| Identification |  |  |  |  |  |
|  |  |  |  |  |  |
| Impurities |  |  |  |  |  |
|  |  |  |  |  |  |
| Assay |  |  |  |  |  |
|  |  |  |  |  |  |
| etc. |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

1. Summary of analytical procedures and validation information for those procedures not previously summarized in 2.3.P.5.2 and 2.3.P.5.3 (e.g. historical analytical procedures):

***2.3.P.5.5 Characterisation of Impurities***

1. Identification of potential and actual impurities:

| **Degradation product (chemical name or descriptor)** | **Structure** | **Origin** |
| --- | --- | --- |
|  |  |  |
|  |  |  |

| **Process-related impurity**  **(compound name)** | **Step used in the FPP manufacturing process** |
| --- | --- |
|  |  |
|  |  |

1. Basis for setting the acceptance criteria for impurities:
2. Maximum daily dose (i.e. the amount of API administered per day) for the API, correspondingVICH Reporting/Identification/Qualification Thresholds for the degradation products in the VMP and the concentration limits (ppm) for the process-related impurities (e.g. residual solvents):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Maximum daily dose for the** | **<x mg/day>** |  |  |  |
| **API:** |  |  |  |  |
|  |  |  |  |  |
| **Test** | **Parameter** | **VICH** | **threshold** | **o** |
|  |  | **concentration** | |  |
|  |  | **limit** |  |  |
|  |  |  |  |  |
| Degradation product | Reporting Threshold |  |  |  |
|  |  |  |  |  |
|  | Identification Threshold |  |  |  |
|  |  |  |  |  |
|  | Qualification Threshold |  |  |  |
|  |  |  |  |  |
| Process-related impurities | <solvent 1> |  |  |  |
|  |  |  |  |  |
|  | <solvent 2>, etc. |  |  |  |
|  |  |  |  |  |

(ii) Data on observed impurities for relevant batches (e.g. comparative bioavailability or biowaiver):

| **Impurity**  **(degradation product and process-related)** | **Acceptance**  **criteria** | **Results** | | |
| --- | --- | --- | --- | --- |
| <batch no., strength, use> |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. Justification of proposed acceptance criteria for impurities:

***2.3.P.5.6 Justification of Specification(s)***

1. Justification of the FPP specification(s) (e.g. evolution of tests, analytical procedures and acceptance criteria, differences from officially recognized compendial standard(s)):

**2.3.P.6 Reference Standards or Materials**

1. Source (including lot number) of primary reference standards or reference materials (e.g. Ph.Int., Ph.Eur., BP, USP, in-house) *not* discussed in 3.2.S.5:
2. Characterization and evaluation of non-official (e.g. not from an officially recognized pharmacopoeia) primary reference standards or reference materials (e.g. elucidation of structure, certificate of analysis) *not* discussed in 3.2.S.5:
3. Description of the process controls of the secondary reference standard (comparative certificate of analysis and IR spectra against primary standard) not discussed in 3.2.S.5:

**2.3.P.7 Container Closure System**

1. Description of the container closure systems, including unit count or fill size, container size or volume:

|  |  |  |  |
| --- | --- | --- | --- |
| **Description**  **(including materials of construction)** | **Strength** | **Unit count or fill size** | **Container size** |
|  |  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |  |
|  |  |  |
|  |  |  |

Summry of specifications of each primary and functional secondary (e.g. foil pouches) packaging components:

|  |  |
| --- | --- |
| **Packaging component** | **Specifications**  **(list parameters e.g. identification (IR))** |
| HDPE bottle |  |
| PP cap |  |
| Induction sealed liners |  |
| Blister films (PVC, etc) |  |
| Aluminum foil backing |  |
| etc. |  |
|  |  |

1. Other information on the container closure system(s):

**2.3.P.8 Stability**

*2.3.P.8.1 Stability Summary and Conclusions*

1. Summary of stress testing and results (e.g. photostability studies, cyclic studies, freeze-thaw studies):
2. Summary of accelerated and long-term testing parameters (e.g. studies conducted):

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Storage** | **conditio** |  | **Strength** | **an** | **Batch size** |  | **Container closur** | **Completed** | **(an** |
| **(◦C, % RH)** |  |  | **batch** |  |  |  | **system** | **proposed)** | **te** |
|  |  |  |  |  |  |  |  |  |
|  |  |  | **number** |  |  |  |  | **intervals** |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

Summary of the stability results observed for the above accelerated and long-term studies:

| **Test** | **Results** |
| --- | --- |
| Description |  |
| Moisture |  |
| Impurities |  |
| Assay |  |
| etc. |  |
|  |  |

1. Proposed storage statement and shelf-life (and in-use storage conditions and in-use period, if applicable):

|  |  |  |
| --- | --- | --- |
| **Container closure system** | **Storage statement** | **Shelf-life** |
|  |  |  |
|  |  |  |
|  |  |  |

***2.3.P.8.2 Post-approval Stability Protocol and Stability Commitment***

1. Stability protocol for *Primary stability batches* (e.g. storage conditions (including tolerances), batch numbers and batch sizes, tests and acceptance criteria, testing frequency, container closure system(s)):

| **Parameter** | **Details** | |
| --- | --- | --- |
| Storage condition(s) (◦C, % RH) |  | |
| Batch number(s) / batch size(s) |  | |
| Tests and acceptance criteria | Description |  |
| Moisture |  |
| Impurities |  |
| Assay |  |
| etc. |  |
|  |  |
| Testing frequency |  | |
| Container closure system(s) |  | |
|  |  | |

1. Stability protocol for *Commitment batches* (e.g. storage conditions

(including tolerances), batch numbers (if known) and batch sizes, tests and acceptance criteria, testing frequency, container closure system(s)):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Parameter** |  | **Details** | |
|  |  |  |  |  |
|  | Storage condition(s) (◦C, % RH) |  |  |  |
|  |  |  |  |  |
|  | Batch number(s) / batch size(s) |  | *<not less than three production batches in each containe* | |
|  |  |  | *closure system>* | |
|  | | |  |  |
|  | Tests and acceptance |  | Description |  |
|  | Criteria |  |  |  |
|  |  | Moisture |  |
|  |  |  |  |  |
|  |  |  | Impurities |  |
|  |  |  |  |  |
|  |  |  | Assay |  |
|  |  |  |  |  |
|  |  |  | etc. |  |
|  | | |  |  |
|  | Testing Frequency |  |  |  |
|  |  |  |  |  |
|  | Container Closure System(s) |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

c)Stability protocol for Ongoing batches (e.g. storage conditions (including tolerances), number of batches per strength and batch sizes, tests and acceptance criteria, testing frequency, container closure system(s)):

| **Parameter** | **Details** | |
| --- | --- | --- |
| Storage condition(s) (◦C, % RH) |  | |
| Batch size(s), annual allocation | *<at least one production batch per year (unless none is produced that year)* *in each container closure system >* | |
| Tests and acceptance  Criteria | Description |  |
| Moisture |  |
| Impurities |  |
| Assay |  |
| etc. |  |
| Testing frequency |  | |
| Container closure system(s) |  | |
|  |  | |

***2.3.P.8.3 Stability Data***

1. The actual stability results should be provided in *Module 3*.
2. Summary of analytical procedures and validation information for those procedures *not* previously summarized in 2.3.P.5 (e.g. analytical procedures used only for stability studies):
3. Bracketing and matrixing design and justification for *Commitment* and/or *Ongoing stability* *batches*, if applicable:

**2.3.A APPENDICES**

**2.3.A.1 Facilities and Equipment**

1. Summary of information on facilities and equipment, in addition to the information provided in other sections of the submission: Not applicable.

2.3.A.2 Adventitious Agents Safety Evaluation

1. Summary of the information assessing the risk with respect to potential contamination with adventitious agents: Not applicable.

**2.3.A.3 Excipients**

1. Summary of the details of manufacture, characterization and controls, with cross references to supporting safety data (nonclinical and/or clinical) for the novel excipients: Not applicable. Novel excipients are not accepted in thePrequalification Programme. See quality guideline for definition.

**2.3.R REGIONAL INFORMATION**

**2.3.R.1 Production Documentation**

***2.3.R.1.1 Executed Production Documents***

1. List of batches (including strengths) for which executed production documents have been provided (e.g. comparative bioavailability or biowaiver batches):

***2.3.R.1.2 Master Production Documents***

1. The blank master production documents for each strength, proposed commercial batch size and manufacturing facility should be provided in *Module 3*.

**2.3.R.2 Analytical Procedures and Validation Information**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ANALYTICAL PROCEDURES AND VALIDATION INFORMATION SUMMARIES | | | | |
|  | | | | |
| **ATTACHMENT NUMBER:** | | |  | |
|  | | | | |
| **HPLC Method Summary** | | | **Volume/Page:** |  |
| **Method name:** |  | | | |
| **Method code:** |  | | **Version and/or Date:** |  |
| Column(s) / temperature (if other than ambient): | | |  | |
| Mobile phase (specify gradient program, if applicable): | | |  | |
| Detector (and wavelength, if applicable): | | |  | |
| Flow rate: | | |  | |
| Injection volume: | | |  | |
| Sample solution concentration  (expressed as mg/ml, let this be termed “A”): | | |  | |
| Reference solution concentration  (expressed as mg/ml and as % of “A”): | | |  | |
| System suitability solution concentration  (expressed as mg/ml and as % of “A”): | | |  | |
| System suitability tests (tests and acceptance criteria): | | |  | |
| Method of quantification (e.g. against API or impurity reference standard(s)): | | |  | |
| Other information (specify): | | |  | |
| **ATTACHMENT NUMBER:** | |  | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Validation Summary** | | **Volume/Page:** | |  | | |
| **Analytes:** | |  |  | |  |  |
| Typical retention times (RT) | |  |  | |  |  |
| Relative retention times (RTImp./RTAPI or Int. Std.): | |  |  | |  |  |
| Relative response factor (RFImp./RFAPI): | |  |  | |  |  |
| **Specificity:** | |  | | | | |
| **Linearity / Range:** | Number of concentrations:  Range (expressed as % “A”):  Slope:  Y-intercept:  Correlation coefficient (r2) : |  |  | |  |  |
| **Accuracy:** | Conc.(s) (expressed as % “A”):  Number of replicates:  Percent recovery (avg/RSD): |  |  | |  |  |
| **Precision /**  **Repeatability:**  (intra-assay precision) | Conc.(s) (expressed as % “A”):  Number of replicates:  Result (avg/RSD): |  | | | | |
| **Precision /**  **Intermediate Precision:**  (days/analysts/equipment) | Parameter(s) altered:  Result (avg/RSD): |  | | | | |
| **Limit of Detection (LOD):** (expressed as % “A”) | |  | | | | |
| **Limit of Quantitation (LOQ):** (expressed as % “A”) | |  | | | | |
| **Robustness:** | Stability of solutions:  Other variables/effects: |  | | | | |
| **Typical chromatograms or spectra may be found in:** | |  | | | | |
| **Company(s) responsible for method validation:** | |  | | | | |
| **Other information (specify):** | |  | | | | |