PROPOSAL FOR ‘PROCESSED CEREAL BASED FOODS FOR INFANTS AND YOUNG CHILDREN IN DEVELOPING COUNTRIES’ TO BE INCORPORATED AS ‘PART B’ IN THE REVISED CODEX STANDARD FOR PROCESSED CEREAL BASED FOODS FOR INFANTS AND YOUNG CHILDREN (CODEX STAN 074-1981 Rev. 1-2006 ) (Prepared by India)

1. The purposes and the scope of the standard:

The Revised Standard for Processed Cereal Based Foods for Infants and Young Children has far reaching implications on the health and nutritional status of children worldwide. The revised Standards CODEX STAN 074-1981 Rev. 1-2006 is a dilution of the earlier pre revised Codex Standards No CODEX STAN 074-1981 and CAC/GL08-1991 as the minimum standards for protein content are not defined and the energy content prescribed is low. It is imperative that growing infants and children consume good quality protein along with adequate energy for sustaining the growth achieved in the first 6 months of life. The age of under 2 years is one of critical growth period and therefore a window of opportunity for optimizing the growth and development potential of the children. Nutritional adequacy in infancy and early childhood is fundamental for realizing the child’s full growth potential. Developing world, especially India and other South Asian countries, require special interventions for optimizing health and nutrition of infants and young children. Keeping in view that these countries face a serious problem of undernutrition rather than obesity, it is proposed that ‘Part B’ may be added to the recently revised Standard for Processed Cereal Based Foods for Infants and Young Children for meeting the challenge of improving nutrition.

‘Part B’ will cover processed cereal-based foods for feeding infants and young children from the age of 6 months onwards.

2. Its relevance and timeliness:

The need for ‘Part B’ has arisen because of high prevalence of underweight children in Developing Countries which begins to rise significantly from the age of 6 months onwards and peaks between 18-24 months². This paper proposes a new energy and protein composition which will help reduce undernutrition in the developing world.

According to State of Worlds Children, 2009 by UNICEF, 148 million children under the age of five were underweight for their age and two thirds of these children live in Asia alone. Together Asia and Africa account for 93% of all underweight children under the age of five in the developing countries.

Bangladesh, India and Pakistan together contribute to one-half of the world's malnourished children, even though they are home to just 29 % of the developing world's under-five population. Prevalence of malnutrition in some of the countries is as below

[Undernutrition in the Developing Countries]
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Bangladesh | 22 | 41 | 16  | 36
India | 28 | 43 | 19  | 38
Indonesia | 9  | 23 | -  | -
Malaysia | 9  | -  | -  | -
Maldives | 22 | -  | 13  | 25
Pakistan | 19 | 31 | 13  | 37
Sri Lanka | 22 | 23 | 14  | 14
Thailand | 9  | 7  | 4  | 12
**Developing countries** | 15 | 24 | 11  | 30
**South Asia** | 27 | 41 | 18  | 38
**World** | 14 | 23 | 11  | 28

Source: State of World’s Children 2009

Considering the magnitude of the problem of undernutrition and its serious consequences on not only the individual health, but on human resource development, productivity of the people, economic growth and ultimately the National development, it is necessary that all efforts are focused towards reducing malnutrition which also includes setting up of suitable standards. In a nutshell, nutrition is critical for the survival and well being of current and succeeding generations and needs to be regarded as the most important single indicator of development.

Early adiposity rebound and childhood obesity linked with high protein intake in early infancy and childhood is not an issue for the developing world. As undernutrition is the major challenge the adverse effects of high energy density / protein content which are seen in developed countries may not be of much significance in the context of developing nations.

A WHO Expert Consultation on Complementary Feeding stated that “active participation of developing countries in the development of the Codex Standards, relevant to infant and young child nutrition, is critical to ensure that the best interest of young children (the vast majority from developing countries) are served.”

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1 Macro Level Approaches to Improve the Availability of Complementary Foods, paper published by Chessa K. Lutter in the special issue of Food and Nutrition Bulletin, Vol. 24, No. 1, 2003
In light of the above, it is necessary that any relevant prescribed standards should adequately address the needs and the realities of the developing world and thus emerges the need for a separate Standard. It is therefore considered essential that the recently revised Codex Standard for Processed Cereal Based Foods has a separate Standard for children of developing countries as ‘Part B’ of the revised Standard, CODEX STAN 074-1981 Rev 1-2006.

3. The main aspects to be covered:

3.1 Cereal content in Cereal Based Foods should be at least 50%: The processed foods for infants and young children are based primarily on cereals since they are not only an important source of carbohydrates but also provide a good amount of protein and other nutrients like minerals and vitamins.

3.2 Minimum protein content should be at least 12%: The minimum content of protein in the processed cereal based foods for infants and young children should not be less than 12% on a dry weight basis and the quality of the protein should not be less than 70% of that of casein.

3.3 Energy Density: The energy density of processed cereal based foods for infants and young children should not be less than 4.2 kJ/g (1.0 kcal/g) of the reconstituted food ready to consume or 16.8 kJ/g (4 kcal/g) on dry weight basis. Fats and oils may be added to increase the energy density to 4 kcal/g on a dry weight basis.

4. An assessment against the Criteria for the establishment of work priorities:

The proposed addition as ‘Part B’ will help in combating malnutrition by providing minimum standards for processed cereal based foods and thereby improving the quality of nutrition provided to infants and young children. It would also support progress towards achieving Goal 1 and 4 of the Millennium Development Goals that sets out to reduce hunger as well as to reduce the mortality rate by two third among children under five by the year 2015.

5. Relevance to the Codex strategic objectives:

The proposed Standard, as ‘Part B’, is in line with the Codex Alimentarius Commission Strategic Plan 2008–2013 - point No 11 of Goal 2 which is ‘Promoting widest and consistent application of scientific principles and risk analysis’.

“The CAC has the goal of elaborating standards that cover the needs of its entire membership to ensure these standards are applicable globally. A constraint to this goal is the persistent lack of relevant data from all major parts of the world.”

“The CAC will continue to encourage countries from both the developed and developing worlds to submit relevant data to the CAC and the parent organizations”.
The food consumption patterns differ between developed and developing countries. The problems feared in developed countries due to a relatively high protein and energy content coupled with high intake of infant foods does not exist among children of developing nations.

6. Information on the relation between the proposal and other existing Codex documents:

CODEX STANDARD FOR PROCESSED CEREAL-BASED FOODS FOR INFANTS AND YOUNG CHILDREN CODEX STAN 074-1981, REV. 1-2006

7. Identification of any requirement for and availability of expert scientific advice;

None foreseen

8. Identification of any need for technical input to the standard from external bodies so that this can be planned for;

None foreseen

9. The proposed time-line for completion of the new work, including the start date. The proposed date for adoption at Step 5, and the proposed date for adoption by the Commission; the time frame for developing a Standard should not normally exceed five years:

As decided during the 30th Session of the CCNFSDU, an Electronic Working Group titled “Standard for Processed Cereal- Based Foods for Underweight Children” was set up by India to review and finalize the proposal for new work on Standards for Processed Cereal based Foods for Infants and Young Children in Developing Countries. The invitation to the member countries and observers were sent through the Codex Secretariat on 15th January 2009.

The earlier proposal for developing separate standards for processed cereal based foods has been reviewed by India and it is now proposed as Part-‘B’ of the revised CODEX STAN 074-1981 REV1-2006 as suggested during the previous session of CCNFSDU in 2008. The proposed ‘Part B’ of the Standard for Processed Cereal Based Foods for Infants and Young Children for Developing Countries will be circulated to the member countries and observers through the Electronic Working Group. On the basis of comments and suggestions from the member countries and observers the proposal will be
finalized and submitted to Codex Secretariat for consideration by the 31st Session of the CCNFS DU (2009).

A Technical Support Paper is attached as PART B- Annexure-A.
TECHNICAL SUPPORT PAPER FOR INCORPORATING AS ‘PART B’ IN REVISED CODEX STANDARD FOR PROCESSED CEREAL BASED FOODS FOR INFANTS AND YOUNG CHILDREN FOR DEVELOPING COUNTRIES

1. CONTEXT

During the 29th session of the Codex Committee on Nutrition and Foods for Special Dietary Uses (CCNFSDU) held in November 2007, the Delegation of India proposed for a separate standard for Processed Cereal-Based Foods for Underweight Infants and Young Children so that nutritionally and energy dense composition in the proposed standard will help to reduce the burden of malnutrition in the developing countries. The issue was taken as one of the agenda items and after discussion the CCNFSDU agreed that the Delegation of India with support of other interested parties will develop a structured document for the purpose.

2. BACKGROUND

The consequences of child hunger and under-nutrition are extreme for the individuals and families affected but also for communities and nations concerned. More than 50 percent of young children’s deaths from infectious diseases such as malaria, pneumonia, diarrhea and measles have under-nutrition as an underlying cause.

Underweight prevalence in children under five, by region (2000–2007)

Under-nutrition continues to be a worldwide problem, particularly in developing countries. According to the most recent estimate (2006) of the United Nations Food and Agriculture Organization (FAO), around 854 million people worldwide are undernourished. This is 12.6 percent of the estimated world population of 6.6

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2 Australia, Brazil, Ghana, Guatemala, Indonesia, Republic of Korea, Malaysia, Mexico, South Africa, Thailand, CI, IBFAN, ISDI and NHF
billion. Most of the undernourished – 820 million - are in developing countries. Geographically, South Asia has the highest (41%) level of under-nutrition.

Exclusive breastfeeding provides all essential nutrients required for the growth of the infant. With the growth of a child the nutritional needs too are increased, and adequate energy, protein and other nutrients are necessary. The graph below indicates the widening gap in nutrition that needs to be fulfilled through complementary food which should be with energy dense food.

![Graph showing nutritional gap](image)

The National Family Health Survey, in India, provides periodical data about various indicators including those for nutrition and reveals that under-nutrition peaks by 18-24 months. This survey conducted in 2005-06 came up with the findings that 79% children of under 3 years of age group are anemic. The condition in other developing countries is almost similar. Moreover, WHO multi-centric studies revealed that normal child growth takes place from birth to 5 years under optimal environmental conditions and can be applied to all children everywhere, regardless of ethnicity, socioeconomic status and type of feeding.

Millions of children in this part of world are at border line of normal and underweight and may slip into the category of underweight at any time due to one or another cause of malnutrition unless timely and appropriate interventions are made. The processed / commercial infant foods form only a small part of the regular feeding in children under 2 years. The energy density, protein quantity and quality therefore are important. Processed Cereal foods providing energy density of 4kcal/g and 12% protein would usually take care of above mentioned components. Some studies done in developed countries have linked early adiposity rebound and childhood obesity to be associated with high protein intake in early infancy and childhood. In most of these

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3 World Hunger Facts 2008, World Hunger Education Service, available at [http://www.worldhunger.org/articles/Learn/world%2520hunger%2520facts%25202002.htm](http://www.worldhunger.org/articles/Learn/world%2520hunger%2520facts%25202002.htm)
populations  the total energy intakes are also higher apart from protein intake which is around 20-22% energy from protein. As undernutrition is the major challenge in this case, the adverse effects of high energy density / protein content which are seen in developed countries may not be of much significance in the context of developing nations.

It is essential that ‘Part B’ be added to the Revised Codex Standard for Processed Cereal Based foods for Infants and young Children to take care of the health and nutrition of the children of developing countries.

“Among the indisputable right of Children is the right of health. Without respecting this right and providing the necessary resources to secure it, we cannot hope to achieve any of the major development goals the world has united around in the United Nations Millennium Declaration. Human Capital is essential to all development. Without basic health and nutrition, the potential of our children goes to waste”– Kofi A. Annan, Secretary General (Former) of the United Nation

3. RATIONALE AND ASPECTS TO BE COVERED

The Revised Standard for Processed Cereal Based Foods for Infants and Young Children has far reaching implications on the nutrition of infants and young children in the world. It is a dilution of the pre revised Codex Standard CODEX STAN 074-1981 and CAC/GL08-1991. The proposal of addition of ‘Part B’ to the recently revised Standard is imperative for meeting the challenge of improving nutrition of infants and young children in the developing world

The key issues are as follows:

3.1 Cereal content in Cereal Based Foods to be at least 50%

The processed cereal based foods for infants and young children are based primarily on cereals since they are not only an important source of carbohydrates but also provide a good amount of protein and other nutrients like minerals and vitamins. By reducing the cereal content to 25%, as was done in the Revised Standard for Processed Cereal Based Foods for Infants and Young Children, the pulse content, if any, would also get reduced and the oil seed content would be negligible. If the cereals, pulses and oil seeds together add up to only 40%, then 60% gap could be filled in by adding starchy roots and tubers such as yam, tapioca etc. which not only have very low nutritive value but also have certain toxic compounds like linamarine cyanogenic glycoside. This may worsen the nutritional status of children in the developing world. The cereal based foods must provide most of the essential amino acids, required for growth and development. If these starchy roots like tapioca and yam form a major part of complementary foods, the protein required, both quantitatively and qualitatively, will have to be supplied from protein concentrates or synthetic amino acids, as the rest of the food items may not be able to
meet the requirements. It is, therefore, important to ensure that the processed cereal based foods do not contain these roots and tubers.

In view of the above, laying down the minimum value of cereals in cereal based foods as 50%, will improve the nutritional density of the infant foods and will leave less scope for replacing the precious cereals with the cheap starchy roots.

3.2 Energy Density of the Cereal Based Foods for Infants and Young Children to be 4 kcal/g on dry weight basis:

The Revised Standard states “the energy density of cereal based foods should not be less than 3.3 kJ/g (0.8 kcal/g). However, it does not clarify if the energy density of 0.8 kcal/g value is of reconstituted infant food ready for feeding or on a dry weight basis.

WHO recommends⁴ that complementary foods with low energy density can limit energy intake and the average energy density should not usually be less than 4.2 kJ/g (1 kcal)/g of reconstituted food. It also concludes that the breastfed infants older than eight months should receive at least three meals of complementary foods per day and that if the energy density of the diet is less than 1kcal/g, more than three meals would be needed.

A WHO Expert Consultation on Complementary Feeding stated that “active participation of developing countries in the development of the Codex Standards, relevant to infant and young child nutrition, is critical to ensure that the best interest of young children (the vast majority from developing countries) are served ⁵”

Keeping in view the widespread prevalence of under-nutrition among infants and young children in the developing world, one of the factors of which may be low energy density of foods after the age of six months, it is important to ensure that the Codex Standard for processed cereal based foods for infants and young children prescribe an optimum energy density as the products with Codex Standards have a global reach.

Under Section 6.2, the Guidelines on Supplementary Foods for Older Infants and Young Children (CAC/GL08-1991) reflect the importance of increasing energy density of these foods and recommend that 100 grams of the food should provide at-least 400 kcal.

In view of above, it is necessary to retain 1.0 kcal/g energy density for reconstituted ready to eat food and 4 kcal/g on dry weight basis.

3.3 Minimum protein content to be at least 12%:

According to para 3.3.2 of the Revised Standard for Processed Cereal Based Foods For Infants and Young Children, the protein content shall not exceed 1.3g/100 kJ (5.5g/100 kcal).
kcal) for products mentioned in point 2.1.2 which include cereals with an added high protein food which are or have to be prepared for consumption with water or other appropriate protein free liquid. It may be noted that for these items, there is no lower limit for protein content prescribed in the standard which is not appropriate for a Codex Standard for foods meant for infants and young children specially in the context of developing world. This leaves enough room for lowering the protein content even to an undesirable level. If these products have a prescribed lower limit for protein, it will ensure adequate protein density of these foods. (As per 3.3.3, for products mentioned in 2.1.2 the added protein content shall not be less than 2g/100 kcal)

Section 3.1.2 of the pre-revised Codex Standard for Processed Cereal Based Foods for Infants and Young Children (CODEX STAN 74-1981) states “where the product is intended to be mixed with water before consumption, the minimum content of protein shall not be less than 15% on a dry weight basis and the quality of the protein shall not be less than 70% of that of casein”.

Section 6.3.5 of the Guidelines on Formulated Supplementary Foods for Older Infants and Young Children (CAC/GL08-1991) states “taking into account the preceding considerations, the protein content should be in the order of 15g/100g of the food on a dry matter basis”. Two issues emerge from the existing Codex Standard and the Guidelines on Formulated Supplementary Foods: (i) The protein content should be of the order of 15g/100g of the food on a dry weight basis specifying the minimum requirement of protein in such products; and (ii) The measurement standard for expressing protein content of the food has not been kept uniform.

Both the above-mentioned guidelines and the pre-revised standards lay down the minimum requirement of protein in gram/100g of the product. Therefore the protein content has been specified in ‘Part B’ as g/100 g of the product to maintain uniformity. The minimum protein content of cereal based foods in the context of developing countries is required, since: (i) Protein Energy Malnutrition (PEM) is high; (ii) Milk intake is low; (iii) Protein intakes are low; and (iv) Infection rates are high in these age groups which increase both energy and protein requirements. Instead of 15% protein as in the pre revised Standard, in context of Developing countries the minimum protein content is recommended as 12%.

In the context of the developing countries, it is strongly recommended that section 3.3 relating to protein should have the minimum protein content as 12% in these products particularly for products included under 2.1.2.

Since PEM or undernutrition is a global problem now and the developing world is facing the challenge of reducing the number of underweight children to achieve the MDGs, it is important that the needs of the developing countries in terms of appropriate standards for these foods is appreciated by the Codex Committee on Nutrition and Foods for Special Dietary Uses and efforts should be made to improve the standards so as to benefit the consumers in the developing world.
4. CONCLUSION

It is recommended that a Codex Standard for Processed Cereal Based Foods for Infants and Young Children for Developing Countries form ‘Part B’ of the recently revised Standard to take care of the nutritional needs of children of developing countries. The current Revised Standard for Processed Cereal Based Foods for Infants and Young Children may be appropriate for the “normal children” of the developed countries already having a high intake of protein and other nutrients in their daily diet and prone to overweight but is not suitable for the prevailing conditions in the developing countries.
PART B

REVISED STANDARD FOR PROCESSED CEREAL-BASED FOODS FOR INFANTS AND YOUNG CHILDREN OF DEVELOPING COUNTRIES

1. SCOPE

This Part covers processed cereal-based complementary foods intended to meet the dietary requirements of infants from the age of six months onwards in Developing countries.

2. DESCRIPTION

Processed cereal-based foods should contain minimum 50% cereals on dry weight basis.

2.1. Product Definitions

Two categories are distinguished:
2.1.1 Products consisting of cereals which are or have to be prepared for consumption with milk or other appropriate nutritious liquids;
2.1.2 Cereals with an added high protein food which are or have to be prepared for consumption with water or other appropriate protein-free liquid;

2.2 Other Definitions

2.2.1 The term infant means a person not more than 12 months of age.
2.2.2 The term young children means persons from the age of more than 12 months up to the age of three years (36 months).

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Essential Composition

3.1.1 The two categories listed in 2.1.1 and 2.1.2 are prepared primarily from one or more milled cereal products, such as wheat, rice, barley,
oats, rye, maize, millet, sorghum and buckwheat. They may also contain legumes (pulses), or oil seeds in smaller proportions.

3.1.2 The requirements concerning energy and nutrients refer to the product ready for use as marketed or prepared according to the instructions of the manufacturer, unless otherwise specified.

3.2 Energy Density

The energy density of cereal-based foods from 2.1.1 and 2.1.2 should be minimum 4.12 kJ/g (1.0 kcal/g) of the reconstituted food or 16.8 kJ/g (4 kcal/g) on dry weight basis.

3.3 Protein

3.3.1 The chemical index of the added protein shall be equal to at least 80% of that of the reference protein casein or the Protein Efficiency Ratio (PER) of the protein in the mixture shall be equal to at least 70% of that of the reference protein casein. In all cases, the addition of amino acids is permitted solely for the purpose of improving the nutritional value of the protein mixture, and only in the proportions necessary for that purpose. Only natural forms of L-amino acids should be used.

3.3.2 For products mentioned at 2.1.1 and 2.1.2, the minimum protein content should be 12g /100 grams by dry weight

The rest of the definitions of revised standards for processed cereal based foods for infants and young children shall be applicable to these standards also.