DIREITO ANIMAL UFPR
TUTELA JURISDICIONAL DOS ANIMAIS
BANCO DE PEÇAS PROCESSUAIS
MODELO: AÇÃO CIVIL PÚBLICA COM PEDIDO DE PROIBIÇÃO DA PRODUÇÃO DA CARNE DE VITELO

EXCELENTÍSSIMO (A) SENHOR (A) JUIZ FEDERAL DA __ª VARA FEDERAL DA SUBSEÇÃO JUDICIÁRIA DE CURITIBA - SEÇÃO JUDICIÁRIA DO PARANÁ

A **ONG ANIMAL,** associação brasileira de direito privado, sem fins lucrativos, inscrita no CNPJ sob o n. 12.221.223/4444-55, por seu representante infra-assinado, com fulcro no artigo 5º, inciso IV da Lei Federal n. 7.347/85, art. 225 § 1º, inciso VII da Constituição Federal, art. 1º e seguintes do Decreto n. 24.645/34, art. 32 da Lei Federal n. 9.605/98, vem, respeitosamente, à presença de Vossa Excelência propor

AÇÃO CIVIL PÚBLICA COM PEDIDO DE TUTELA DE URGÊNCIA

em face da **UNIÃO FEDERAL**, pessoa jurídica de direito público interno, inscrita no CNPJ sob n° 00.396.895/0001-25, com endereço na Esplanada dos Ministérios, S/N, bloco 8, 8º Andar, a ser citada na pessoa do Procurador-Geral da União, e da **EMPRESA PRODUTORA DE VITELA (nome fictício),** pessoa jurídica de direito privado, inscrita no CNPJ sob número XXXXX, com endereço na XXXXXX, pelas razões expostas a seguir.

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1 – DOS FATOS

O vitelo, também chamado popularmente de carne de vitela, trata-se do nome comercial para a carne advinda de bezerros submetidos a um método de produção notoriamente cruel a fim de que adquiram uma coloração esbranquiçada ou rosada característica e maciez. Os bezerros destinados para a produção de carne de vitelo são sujeitados a condições cruéis e antinaturais para a espécie, que envolvem privação do contato materno, privação social, confinamento intensivo e dieta insuficiente, somente para atingir as propriedades que o mercado exige, ou seja, uma carne branca – ou rosa clara – e macia.[1]

Para que a carne tenha tais características, os bezerros são retirados de suas mães ainda recém-nascidos, gerando um alto estresse às mães e aos bezerros.[2] Por conta dessa separação prematura, que além do estresse, também impossibilita a amamentação, 1 em cada 20 bezerros - criados para a produção de carne de vitelo - morrem de diarréia ou pneumonia. Ademais, a deficiência de colostro (forma de leite de baixo volume secretado pela maioria dos mamíferos nos primeiros dias de amamentação pós-parto, rico em leucócitos, proteínas e carboidratos) faz com que os bezerros não se desenvolvam plenamente e tenham o sistema imunológico prejudicado.[3]

Após essa cruel separação, que pode ser vista no "vídeo 01", em anexo, os bezerros são alojados em caixotes, baias individuais, geralmente medindo 44-76 cm de largura por 168 cm de altura. [4] A negação da amamentação natural acarreta uma alteração comportamental,

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[1] "An HSUS Report: The Welfare of Animals in the Veal Industry"- The Humane Society of the United States.

[2] U.S. Environmental Protection Agency. Ag 101. Lifestyle production phases. www.epa.gov/oecaagct/ag101/dairyphases.html. Accessado em 05 de maio de 2019.

[3] Wilson LL, Stull CL, and Terosky TL. 1995. Veal perspectives to the year 2000: scientific advancements and legislation addressing veal calves in North America. Proceedings of the International Symposium in Le Mans, France, Setembro.

Weary DM and Chua B. 2000.Effects of early separation on the dairy cow and calf: 1. Separation at 6 h, 1day, and 4 days after birth. Applied Animal Behaviour Science 69(3):177-88.

Metz J and Metz JHM. 1986. Maternal influence on defecation and urination in the newborn calf. Applied Animal Behaviour Science 16(4):325-33.

[4] U.S. Department of Agriculture, Food Safety and Inspection Service. 2006. Veal from farm to table. www.fsis.usda.gov/Fact_Sheets/Veal_from_Farm_to_Table/index.asp. Accessedo em 05 de Maio de 2019.

na qual os bezerros devem ser mantidos separadamente para que não simulem uma amamentação entre eles.[5] Separando-os individualmente, porém, faz com que a falta de contato social entre os pares aumente ainda mais o estresse. [6] Ainda, para seus músculos não se desenvolverem, a fim de que a carne seja macia, são amarrados pela frente por um cabresto de metal ou fibra medindo 0.6-0.9m, o que impossibilita qualquer movimento, inclusive deitar-se confortavelmente,[7] até que o animal alcance o peso para o abate. Importante pontuar que é ponto incontroverso na literatura médico-veterinária que bezerros são animais sociais que obtêm conforto físico, fisiológico e psicológico a partir do convívio entre seus pares.[8]

O que leva à coloração típica da carne de vitelo é a deficiência em ferro da dieta desses bezerros.[9] Aqui, há duas formas de produção distintas: uma com uma dieta exclusivamente líquida (composta por um substituto do leite) e outra na qual há uma pequena quantidade de alimentação sólida. Ambas as formas, pobres em ferro e fibra, estão muito distantes de uma dieta ideal para o desenvolvimento saudável do animal. Tais dietas impactam severamente a saúde desses animais, que estão em estado anêmico permanente.[10]

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[5] Jensen MB. 2003. The effects of feeding method, milk allowance and social factors on milk feeding behaviour and cross-sucking in group housed dairy calves. Applied Animal Behaviour Science 80(3):191-206.

de Passillé AM. 2001. Sucking motivation and related problems in calves. Applied Animal Behaviour Science 72(3):175-87.

[6] Dellmeier GR, Friend TH, and Gbur EE. 1985. Comparison of four methods of calf confinement: II. Behavior. Journal of Animal Science 60(5):1102-9.

[7] Van Putten G. 1982. Welfare in veal calf units. The Veterinary Record 111(19):437-40.

[8] Morisse JP, Cotte JP, Huonnic D, and Martrenchar A. 1999. Influence of dry feed supplements on different parameters of welfare in veal calves. Animal Welfare 8(1):43-52.

Broom DM. 1991. Needs and welfare of housed calves. In: Metz JHM and Groenestein CM (eds.), New Trends in Veal Calf Production (Wageningen, The Netherlands: EAAP Publications, pp. 23-31).

European Food Safety Authority. 2006. Scientific opinion on the risks of poor welfare in intensive calf farming systems. An update of the Scientific Veterinary Committee report on the welfare of calves. Annex to The EFSA Journal 366:1-36. www.efsa.europa.eu/en/efsajournal/doc/366.pdf. Acessado em 05 de maio de 2019.

Friend TH and Dellmeier GR. 1988. Common practices and problems related to artificially rearing calves: an ethological analysis. Applied Animal Behaviour Science 20(1/2):47-62.

[9] Ngapo TM and Gariépy C. 2006. Factors affecting the meat quality of veal. Journal of the Science of Food and Agriculture 86(10):1412-31.

[10] Stull CL and McDonough SP. 1994. Multidisciplinary approach to evaluating welfare of veal calves in commercial facilities. Journal of Animal Science 72(9):2518-24.

Somado ao estresse, é comum que esses bezerros desenvolvam úlceras no estômago e danos severos no abomaso (quarta câmara do estômago dos ruminantes, onde ocorre a digestão). [11]

Bezerros são animais ruminantes, isto é, sua digestão possui dois estágios, possuindo vários compartimentos gástricos, por isso também chamados poligástricos. Nesse processo natural, os ruminantes mastigam, engolem, regurgitam e, novamente, mastigam.[12] Em decorrência dessa característica, conseguem digerir eficientemente gramas e outras plantas fibrosas. Quando criados *outdoor* começam a se alimentar de gramas e ruminar após apenas algumas semanas de vida, passando geralmente 6 horas diárias pastando e ruminando: dieta muito diferente da proporcionada aos bezerros envolvidos na produção de carne de vitelo.[13]

Tendo em vista o estresse gerado pelos fatores descritos, a manutenção dos animais é em completa escuridão durante 22 horas do dia, acendendo-se a luz somente nos momentos de manutenção dos caixotes para reduzir o estresse e as consequências dele.

Desse modo, considerando que as modalidades de produção de vitelo são, notoriamente, formas de maus tratos aos animais, a presente ação civil pública é intentada para que se evite essa prática condenada e proibida em várias partes do mundo, como em diversos estados dos EUA, como Michigan, Califórnia e Maine, e no Reino Unido.[14]

2 - PRELIMINARMENTE

a) Da Legitimidade *ad causam*:

[11] Wiepkema PR, van Hellemond KK, Roessingh P, and Romberg H. 1987. Behaviour and abomasal damage in individual veal calves. Applied Animal Behaviour Science 18(3/4):257-68.

Friend TH. 1991. Symposium: Response of animals to stress (Behavioral aspects of stress). Journal of Dairy Science 74(1):292-303.

[12] Fraser AF and Broom DM. 1990. Farm Animal Behaviour and Welfare, Third Edition (London, U.K.: Bailliere Tindall).

[13] Veissier I, Ramirez de la Fe AR, and Pradel P. 1998. Nonnutritive oral activities and stress responses of veal calves in relation to feeding and housing conditions. Applied Animal Behaviour Science 57(1/2):35-49.

[14] American Veterinary Medical Association, “Literature Review on the Welfare Implications of the Veal Calf Husbandry,” 2008.

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No que diz respeito à legitimidade ativa, o artigo 5º, da Lei n.º 7.347/85, que disciplina a ação civil pública, tem um rol taxativo. Vejamos:

> "Art. 5º - Têm legitimidade para propor a ação principal e a ação cautelar:
> I. Ministério Público;
> II. Defensoria Pública;
> III. A União, os Estados, o Distrito Federal e os Municípios;
> IV. Autarquias, empresas públicas e sociedades de economia mista; e
> V. **Associação**, que concomitantemente:
> a) esteja constituída há pelo menos um ano, nos termos da lei civil;
> b) inclua entre as suas finalidades institucionais a proteção dos seguintes direitos difusos e coletivos: o patrimônio público e social, meio ambiente, consumidor, à ordem econômica, à livre concorrência, aos direitos de grupos raciais, étnicos ou religiosos ou ao patrimônio artístico, estético, histórico, turístico e paisagístico.

De acordo com dispositivo acima, existem alguns requisitos a serem atingidos para tal propositura, e é garantido falar que a categoria jurídica da "Associação de Defesa dos Animais" se enquadra no disposto no artigo 5º da Lei 7.347/85, e tem legitimidade ativa para propositura de ação civil pública.

Quanto ao requisito de pertinência temática (alínea B, do inciso V do artigo 5º da Lei nº. 7.347/85), da análise do Estatuto Social que rege a referida associação, restou observado que o mesmo possui cláusula que define dentre suas finalidades a proteção aos direitos individuais homogêneos dos animais não-humanos, podendo-se valer de todos os meios de tutela para sua preservação e reparação, dentre elas, ações coletivas como o mandado de segurança coletivo e ação civil pública, atingindo o requisito de pertinência temática.

A associação foi fundada em XXXX, preenchendo o requisito temporal aludido no artigo 5º inciso, V, alínea a da Lei de Ação Civil Pública, o que confere a esta legitimidade ativa.

Cuida-se da tutela coletiva de direitos individuais homogêneos, prevista no artigo 81, III do CDC, assim considerados interesses individuais de origem comum. Mais precisamente, trata-se de direitos individuais homogêneos de 4ª geração:

> "Art. 81. (...) **III** - interesses ou direitos individuais homogêneos, assim entendidos os decorrentes de origem comum."

b) Da Legitimidade Passiva

A ação civil pública, no que diz respeito à legitimidade passiva, entende que é possível que qualquer pessoa verse no polo passivo, seja ela física ou jurídica, de direito público ou privado que seja responsável por ameaça de dano ou lesão aos direitos coletivos tutelados no art. 1º da Lei 7.347/85.

Neste caso, conforme resta límpido, a União Federal - Ministério da Agricultura, Pecuária e Abastecimento - é a detentora da liberação da produção, comercialização em território nacional, importação, e, principalmente, por possuir o comando de órgãos que são responsáveis pela fiscalização desse tipo de produção, razão pela qual é contra ela e contra a "Empresa Produtora de Vitela", que participa diretamente da produção, que se litiga.

Diante de tudo até aqui exposto, a União Federal - Ministério da Agricultura, Pecuária e Abastecimento - e a "Empresa Produtora de Vitela" devem ser responsabilizadas pelo ocorrido, pois, por consequência da produção de vitelo, está em risco a dignidade de todos os bezerros - e seus direitos individuais de 4ª geração - submetidos a qualquer dos métodos de produção de vitelo, cruéis em sua essência.

3 – DOS FUNDAMENTOS

Nos moldes do artigo 1º da Lei 7.347/85 (Lei da Ação Civil Pública), é cabível a ação civil pública para conter ou assegurar bens protegidos, os quais sejam: danos causados ao meio ambiente, ao consumidor, aos bens e direitos de valor artístico, estético, histórico, turístico e paisagístico, a qualquer interesse difuso ou coletivo, por infração da ordem econômica, à ordem urbanística, à honra e à dignidade de grupos raciais, étnicos ou religiosos e ao patrimônio público e social.

A tutela coletiva de direitos individuais homogêneos, considerados interesses individuais de origem comum, está prevista no artigo 81, III do CDC:

> "Art. 81. A defesa dos interesses e direitos dos consumidores e das vítimas poderá ser exercida em juízo individualmente, ou a título coletivo.

> Parágrafo único. A defesa coletiva será exercida quando se tratar de:
> III - interesses ou direitos individuais homogêneos, assim entendidos os decorrentes de origem comum."

Porém, não se está a tratar aqui de direito difuso, como se enquadraria o direito ao meio ambiente equilibrado, mas sim, de direito individual homogêneo, vez que, nesse caso, há uma transindividualidade instrumental. Os seus titulares são determinados e o seu objeto é divisível e admite reparabilidade direta. Aqui, os bezerros estão sendo considerados como sujeitos de direitos em si, e não em razão de função ecológica, como defende o Direito Ambiental.

Nelson Nery Júnior e Rosa Maria de Andrade Nery conceituam os direitos individuais homogêneos como:

> "(...) direitos individuais cujo titular é perfeitamente identificável e cujo objeto é divisível e cindível. O que caracteriza um direito individual comum como homogêneo é a sua origem comum. A grande novidade trazida pelo CDC no particular foi permitir que esses direitos individuais pudessem ser defendidos *coletivamente* em juízo. Não se trata de pluralidade subjetiva de demanda (litisconsórcio), mas de uma única demanda, coletiva, objetivando a tutela dos titulares dos direitos individuais homogêneos. A ação coletiva para a defesa de direitos individuais homogêneos é, *grosso modo*, a *class actin* brasileira."

Conforme documentos juntados à inicial, levando em consideração a tutela coletiva dos direitos individuais homogêneos de 4ª geração, no que diz respeito à dignidade dos bezerros envolvidos na produção de carne de vitela, não resta outra maneira a não ser acionar a Justiça para se garantir a responsabilização da União.

Deve-se considerar que o Direito Animal tem sido considerado mundo afora um novo ramo do direito, que desconstrói a visão antropocêntrica, até então legitimada, e busca fazer valer os interesses daqueles que têm sido historicamente subjugados pelas condutas humanas. Assim, os interesses e direitos dos animais, em especial o direito de não sofrer, têm sido violados em prol do ser humano para os mais diversos fins, para entretenimento, para fins científicos, fins educativos, para fins gastronômicos (como é o caso da vitela), entre outros.

Destaca-se a regra de proibição da crueldade expressa na Constituição Federal de 1988 em seu artigo 225, §1°, VII, única no mundo a **vedar de forma expressa a crueldade contra os animais,** reconhecendo o princípio da dignidade animal. Isso indica que os animais (sejam eles silvestres, domésticos ou domesticados) são seres sencientes, ou seja, detém a **capacidade de receber e reagir a um estímulo, seja positivo ou negativo, de forma consciente, experimentando-o a partir de dentro,** e de que seu **sofrimento (físico ou psíquico) é moralmente significante** a ponto de ser protegido a nível constitucional.

> Art. 225. Todos têm direito ao meio ambiente ecologicamente equilibrado, bem de uso comum do povo e essencial à sadia qualidade de vida, impondo-se ao poder público e à coletividade o dever de defendê-lo e preservá-lo para as presentes e futuras gerações.
> § 1º Para assegurar a efetividade desse direito, incumbe ao poder público:
> (...)
> VII - proteger a fauna e a flora, **vedadas, na forma da lei**, **as práticas que** coloquem em risco sua função ecológica, provoquem a extinção de espécies ou **submetam os animais a crueldade**. (grifo nosso)

Nesse sentido, vale mencionar que a declaração da inconstitucionalidade da vaquejada (ADI n. 4983), no final de 2016, pelo STF, representou um importante avanço no movimento pelos direitos dos animais, pois se reconheceu que a norma que veda a crueldade contra os animais tem um **viés biocêntrico** (ou seja, reconhece o valor intrínseco da vida dos animais) e possui **tutela autônoma** (isto é, possui o objetivo de proteger os animais da crueldade humana, e não em razão da preservação da biodiversidade ou pela sua função ecológica).

Assim, como afirmou o Ministro Roberto Barroso:

> *"A vedação da crueldade contra animais na Constituição Federal deve ser considerada uma norma autônoma, de modo que sua proteção não se dê unicamente em razão de uma função ecológica ou preservacionista, e a fim de que os animais não sejam reduzidos à mera condição de elementos ao meio ambiente. Só assim reconheceremos a essa vedação o valor eminentemente moral que o constituinte lhe conferiu ao propô-la em benefício dos animais sencientes. Esse valor moral está na declaração de que* ***o sofrimento animal importa por si só****,*

> *independentemente do equilíbrio do meio ambiente, da sua função ecológica ou de sua importância para a preservação de sua espécie"* (STF, Pleno, ADI 4983, Relator Ministro Marco Aurélio, julgado em 06/10/2016, publicado em 27/04/2017).

E ainda:

> "o próprio tratamento dado aos animais pelo Código Civil brasileiro - 'bens suscetíveis de movimento próprio' (art. 82, caput, CC) - revela uma visão mais antiga, marcada pelo especismo, e comporta revisão". (STF, Pleno, ADI 4983, Relator Ministro Marco Aurélio, julgado em 06/10/2016, publicado em 27/04/2017).

Em âmbito infraconstitucional, o método de produção da carne de vitela, como descrito acima, amolda-se ao tipo penal definido no **artigo 32 da Lei Federal n. 9.605/98**, conforme segue:

> Art. 32. Praticar **ato de abuso, maus-tratos, ferir ou mutilar** animais silvestres, domésticos ou domesticados, nativos ou exóticos:
> Pena - detenção, de três meses a um ano, e multa.
> § 1º Incorre nas mesmas penas quem realiza experiência dolorosa ou cruel em animal vivo, ainda que para fins didáticos ou científicos, quando existirem recursos alternativos.
> § 2º A pena é aumentada de um sexto a um terço, se ocorre morte do animal. (grifo nosso)

Apesar de estar inserido na lei conhecida como Lei de Crimes Ambientais, não se trata de um crime ambiental. O art. 32 da Lei 9.605/1998 não é um crime ambiental, e sim um crime contra a dignidade animal. É a dignidade animal o bem jurídico a ser tutelado, de modo que a vítima, nesse caso, **é o animal, pois ele que efetivamente sofre pelos atos daqueles que atentam contra sua integridade física e psíquica**, e não a coletividade**.**

Em 1993 o FAWC - Farm Animal Welfare Council publicou um documento que contém os princípios norteadores do bem-estar animal, o qual ficou conhecido como as cinco liberdades, as quais sejam a liberdade nutricional, ambiental, comportamental, psicológica e de saúde.

A liberdade nutricional determina que o animal deve estar livre de fome, sede e subnutrição. Porém, os bezerros do caso em questão estão privados de gozar deste direito, haja vista que, conforme descrito na exposição fática, a produção de vitela é baseada na restrição alimentar, de modo que os filhotes são alimentados somente com dieta líquida deficiente em ferro, o que ocasiona anemia e problemas respiratórios no animal.

Com isso, a liberdade de saúde também não é assegurada ao bezerro, tendo em vista que a mesma dispõe que o animal deve ser livre de doenças físicas ou mentais, o que não durante o processo de produção da vitela.

A liberdade ambiental garante ao animal estar livre de desconforto, de modo a ficar em ambientes confortáveis, adequados a cada espécie. Contudo, na produção de vitela, os bezerros são armazenados em minúsculos espaços individuais, com limitação de movimento e, muitas vezes, com a cabeça presa, a fim de objetivar que o animal não se mova e não desenvolva músculos, tornando a carne macia.

A liberdade comportamental prevê que deve ser assegurado o animal o comportamento natural de cada espécie. No entanto, também não é o que ocorre no presente caso, já que o comportamento normal dos bezerros é estar próximo da mãe, com liberdade de andar e explorar os ambientes.

E, por fim, a liberdade psicológica dispõe que os animais não devam ser submetidos a condições que ocasionam sofrimento mental. Porém, pelo fato dos bezerros ficarem presos, sem movimentação adequada, longe de sua mãe, sofrendo restrição alimentar e maus tratos, demonstram que esses animais possuem o psicológico gravemente afetado.

O fato de existirem liberdades as quais todos os animais têm o direito de usufruir demonstra a existência de dignidade animal.

Diante disso, resta evidente que **os animais não são coisas**, mas são **seres sencientes**, uma vez que não há porque proibir crueldade contra objetos. Vale ressaltar, ainda, o reconhecimento formal da consciência animal (e, por conseguinte, da sua senciência) pela comunidade científica, no ano de 2012, através da **Declaração de Cambridge sobre a Consciência Animal**[1], emitida por grupo de neurocientistas, neurofarmacologistas, neurofisiologistas, neuroanatomistas e neurocientistas computacionais cognitivos, *in verbis:*

> *"A ausência de um neocórtex não parece impedir que um organismo experimente estados afetivos. Evidências convergentes indicam que os animais não humanos têm os substratos neuroanatômicos, neuroquímicos e neurofisiológicos de estados de consciência juntamente como a capacidade de exibir comportamentos intencionais. Consequentemente,* ***o peso das evidências indica que os humanos não são os únicos a possuir os substratos neurológicos que geram a consciência. Animais não humanos, incluindo todos os mamíferos e as aves, e muitas outras criaturas, incluindo polvos, também possuem esses substratos neurológicos"***[15].

Portanto, essa senciência revela que o animal é um ser dotado de dignidade própria, o que implica em um rol específico de direitos, uma vez que toda dignidade deve ser protegida por direitos fundamentais.

Em relação a isso, o Código de Direito e Bem-estar animal do Estado da Paraíba prevê, em seu art. 2º, que:

> *"Os animais são seres sencientes e nascem iguais perante a vida, devendo ser alvos de políticas públicas governamentais garantidoras de suas existências dignas, a fim de que o meio ambiente, bem de uso comum do povo e essencial à sadia qualidade de vida dos seres vivos, mantenha-se ecologicamente equilibrado para as presentes e futuras gerações*", e em seu art. 3º que "*É dever do Estado e de toda a sociedade garantir a vida digna, o bem-estar e o combate aos abusos e maus tratos de animais".*

Além disso, estão elencados direitos fundamentais que todos os animais detém, inclusive os animais utilizados na indústria alimentícia:

> Art. 5º Todo animal tem o direito:
> I - de ter as suas existências física e psíquica respeitadas;
> II - de receber tratamento digno e essencial à sadia qualidade de vida;
> III - a um abrigo capaz de protegê-lo da chuva, do frio, do vento e do sol, com espaço suficiente para se deitar e se virar;

[15] Disponível em: <http://www.ihu.unisinos.br/172-noticias/noticias-2012/511936-declaracao-de-cambridge-sobre-a-consciencia-em-animais-humanos-e-nao-humanos>. Último acesso: 31 abr. 2019.

> IV - de receber cuidados veterinários em caso de doença, ferimento ou danos psíquicos experimentados;
> V - a um limite razoável de tempo e intensidade de trabalho, a uma alimentação adequada e a um repouso reparador.

Com isso, de acordo com Ataide Junior, "*consagra-se, assim, uma nova dimensão dos direitos fundamentais: o direito fundamental animal à existência digna*"[16].

O dispositivo normativo acima, portanto, trata-se da legislação brasileira mais avançada no âmbito do direito animal, de modo que pode e deve ser utilizada no caso vertente porque, apesar dos fatos aqui narrados não se darem exclusivamente na Paraíba, não há relação hierárquica entre normas oriundas de entes estatais distintos e, em virtude da não existência de lei federal que normatize a questão, é possível que se invoque legislação de outro ente federativo.

Assim sendo, diante de tudo que fora exposto até então, não resta dúvida de que os animais possuem direitos fundamentais, os quais devem ser assegurados pelo Estado.

Permitir uma prática como a produção e importação da carne de vitela, a qual demanda excessiva crueldade para com o bezerro, é o mesmo que ignorar toda a legislação ambiental e animal existente no país, o que é inconcebível.

Desta forma, a presente Ação Civil Pública é perfeitamente cabível no caso vertente.

4 – DO PEDIDO DE TUTELA DE URGÊNCIA

Diante dos fatos, por tudo que fora explanado, não restam dúvidas de que a concessão de tutela antecipada é medida extremamente necessária, como forma de evitar que os danos decorrentes da conduta da impetrada continuem ocorrendo.

Conforme entendimento predominante, a Ação Civil Pública com a finalidade de recuperação de dano ambiental, ou neste caso dano a direito fundamental de 4ª geração, pode

[16] ATAIDE JUNIOR, Vicente de Paula. Código de bem-estar animal da Paraíba deve servir de modelo para o Brasil. Disponível em <https://www.conjur.com.br/2018-dez-23/vicente-paula-codigo-paraiba-modelo-direito-animal>.

ser ajuizado contra o responsável direto ou indireto, ou contra ambos, uma vez que de certa forma todos contribuíram para a sua ocorrência, sendo patente a solidariedade.

É expressamente previsto no art. 12 da Lei nº. 7.347/85, que regula a matéria procedimental da ação civil pública, a proposição de medida liminar ante a eventual necessidade de tutela instrumental ao objeto da tutela jurisdicional principal, de cunho cognitivo, garantido, assim, a efetividade e utilidade desta.

A tutela de urgência prevista no artigo 305 do Código de Processo Civil, por estar devidamente positivada na Parte Geral, permite que ela se enquadre em qualquer tipo de processo, em qualquer fase do processo e em qualquer grau de jurisdição.

No entanto, ela requer, além das condições comuns da ação, condições específicas, ou seja, a presença da *"fumus boni juris"* e do *"periculum in mora"*.

Pois bem.

Na presente demanda, encontram-se perfeitamente presentes a *"fumaça do bom direito",* em razão do flagrante desrespeito às normas vigentes, haja vista que a produção da carne de vitela está em desacordo com o disposto no artigo 225, §1°, VII, da Constituição Federal, além de desrespeitar normas fundamentais do Direito Animal, conforme disposto no art. 5º, incisos I, II e III, do Código de Direito e Bem-estar animal do Estado da Paraíba; e o *"perigo da demora",* haja vista que, enquanto perdurar a produção e importação de carne de vitela em território nacional, os direitos fundamentais de 4ª geração não estarão devidamente assegurados, de modo que inúmeros animais serão abatidos sem que lhes seja reconhecido, em vida, o direito à vida digna.

Desta forma, é certo que, a menos que se coíba por ordem judicial, a qual venha antes do término da presente ação, a produção e a importação da carne de vitela, a vida de inúmeros animais será perdida em vão, de modo que, para estes, a presente ação terá restado inócua. O que se busca aqui, portanto, é evitar que maiores violações constitucionais e legais ocorram enquanto a cognição exauriente não se forma.

Além do mais, está manifestamente presente o risco de lesão grave de impossível reparação, tendo em vista a importância do bem jurídico ambiental e animal, e a situação peculiar de agravamento diário da situação vivida pelos bezerros que se

encontram desnutridos, impossibilitados de se movimentar dentro de suas baias, em nível constante de estresse e sofrimento, impossibilitados de usufruírem de suas próprias vidas de modo digno.

Caso não sejam imediatamente paralisadas as atividades de importação e produção da carne de vitela, a situação tenderá a tomar proporções ainda mais profundas, e a reparação tornar-se-á impossível para aqueles animais que tiveram a vida ceifada de forma cruel.

A gravidade dos fatos e a magnitude dos danos causados justificam, por si só, o deferimento da medida antecipatória. Pois, aguardar a ação do tempo, em um caso de dano ambiental e animal em proporções cruéis, é equivalente a legitimar tal ato e dificultar ainda mais a reparação do dano, o que poderia se equiparar a denegação de Justiça.

Diante do exposto, ante a presença dos requisitos dispostos no art. 300 do Código de Processo Civil, pugna-se pela concessão da tutela provisória de urgência em caráter antecipado a fim de que este Juízo determine a abstenção imediata de qualquer atividade que envolva a produção e importação de carne de vitela em território nacional, sob pena de multa diária a ser arbitrada por Vossa Excelência.

5 – DOS PEDIDOS

Diante do exposto, pugna-se:

a) A citação das requeridas para, querendo, contestar a presente ação, sob pena de revelia;

b) <u>A concessão da tutela de urgência pleiteada a fim de que seja determinado por este Juízo a abstenção imediata de qualquer atividade de importação e produção de carne de vitela em território nacional, sob pena de multa diária a ser arbitrada por Vossa Excelência;</u>

c) A intimação do representante do Ministério Público para apresentar parecer, nos termos da lei;

d) Seja julgada procedente a ação, tornando definitiva a liminar concedida, nos termos do art. 487, I, do Código de Processo Civil, condenando as requeridas na obrigação de não realizar, permitir ou autorizar a produção de carne de vitela no âmbito do território nacional, ante fundamentação supra;

e) A condenação das requeridas ao pagamento de custas e honorários advocatícios;

f) A concessão dos benefícios do artigo 18 da Lei nº 7.347/85;

g) Protesta provar o alegado por todos os meios em direito admitidos, especialmente pelos documentos ora juntados, oitiva de testemunhas e outras mais que se fizerem necessárias, desde já requeridas.

Dá se a causa de R$60.000,00 (sessenta mil reais) para meros efeitos fiscais.

Nestes termos,

Pede deferimento.

Cidade X, dia XX, de XXXX, de XXXX.

DIREITO ANIMAL UFPR
TUTELA JURISDICIONAL DOS ANIMAIS
BANCO DE PEÇAS PROCESSUAIS
MODELO: AÇÃO CIVIL PÚBLICA COM PEDIDO DE PROIBIÇÃO DA PRODUÇÃO DA CARNE DE VITELO

ANEXOS

DIREITO ANIMAL UFPR
TUTELA JURISDICIONAL DOS ANIMAIS
BANCO DE PEÇAS PROCESSUAIS
MODELO: AÇÃO CIVIL PÚBLICA COM PEDIDO DE PROIBIÇÃO DA PRODUÇÃO DA CARNE DE VITELO

DIREITO ANIMAL UFPR
TUTELA JURISDICIONAL DOS ANIMAIS
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DIREITO ANIMAL UFPR
TUTELA JURISDICIONAL DOS ANIMAIS
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July 2012

THE HUMANE SOCIETY OF THE UNITED STATES

An HSUS Report: The Welfare of Animals in the Veal Industry

Abstract

Intensive confinement of calves raised for veal has long raised pointed concerns regarding the animals' welfare. Traditional production practices include individually isolating calves in narrow wooden stalls or pens, which severely restrict movement, feeding the animals an all-liquid diet deliberately low in iron, and prematurely weaning the animals. Stressful conditions lead to a high incidence of stereotypic behavior and illness. Scientific reviews of the welfare of intensively confined calves raised for veal have concluded that the young animals suffer when reared in conventional systems.

Introduction

As defined by the U.S. Department of Agriculture (USDA) Food Safety and Inspection Service (FSIS), veal "is the meat from a calf or young beef animal. A veal calf is raised until about 16-18 weeks of age, weighing up to 450 pounds [204 kg]. Male dairy calves are used in the veal industry. Dairy cows* must give birth to continue producing milk, but male dairy calves are of little or no value to the dairy farmer. A small percentage are raised to maturity and used for breeding."[1]

Two types of veal are recognized by the USDA: bob veal, produced from calves slaughtered at up to three weeks of age, and special-fed veal, from calves slaughtered around 16-18 weeks. Calves raised for both bob and special-fed veal are fed liquid milk-replacement diets.[2] Of the more than 450,000 calves raised for veal in the United States annually[3]—the vast majority of whom are male dairy calves, primarily Holsteins—approximately 15% are marketed as bob veal, with special-fed veal, also known as white (for its very pale hue), milk-fed, or formula-fed veal, comprising the bulk of the industry.[4]

Calves in veal crates.
Photo by Farm Sanctuary.

Presently, the majority of calves raised for veal in the United States are reared indoors in individual stalls[5] typically measuring 66-76 cm (26-30 in) wide by 168 cm (66 in) long,[6] and approximately 30% are raised in group-housing systems.[7] Although commonly referred to as "crates," veal stalls are constructed with open backs and partial walls separating each individually confined calf. Calves are tied to the front of the stall with a fiber or metal 0.6-0.9 m (2-3 ft) tether,[8] restricting virtually all movement until they reach slaughter weight.

Though not identified by the USDA in its FSIS "Veal from Farm to Table" fact sheet,[9] a third type of veal is marketed in North America—grain-fed or non-special fed veal[10]—produced from calves who receive a diet that contains grain and forage (hay, silage, or pasture), as well as liquid milk replacer.[11,12] and are typically housed

* For more information, see "An HSUS Report: The Welfare of Cows in the Dairy Industry" at www.humanesociety.org/assets/pdfs/farm/hsus-the-welfare-of-cows-in-the-dairy-industry.pdf.

in group pens or loose housing after weaning at 6-8 weeks old.[13] The calves' flesh has a darker color[14] and is often referred to as red or pink veal.

Due to strong public opinion for the improved welfare of these young animals, individual housing beyond eight weeks old has been prohibited in the United Kingdom since 1990,[15] and fibrous food and bedding have been required since 2000.[16] Group housing beyond eight weeks of age and daily fibrous food rations from two weeks of age have been mandatory in the rest of the European Union (EU) since January 1, 2007.[17,18] Tethering in individual housing is not permitted and may only be used in group housing for a maximum of one hour following each milk feed.[19]

In the United States, a growing number of state laws prohibit or restrict the use of veal crates. Arizona voters approved a citizen initiative, Proposition 204, in November 2006, which states: "A person shall not tether or confine any pig during pregnancy or any calf raised for veal, on a farm, for all or the majority of any day, in a manner that prevents such animal from lying down and fully extending his or her limbs, or turning around freely."[20] The law went into effect December 31, 2012, and prohibits the housing of calves in individual stalls. Colorado followed suit in 2008, banning crates for veal calves effective January 1 2012 and gestation crates for pregnant pigs by 2018.[21,22] Veal crates were also banned by the landslide passage of Proposition 2 on the November 2008 California ballot. The measure passed with 63.5% of the vote, when more than 8 million Californians elected to disallow the intensive confinement systems of veal crates, gestation crates for pregnant sows, and battery cages for egg-laying hens, effective January 1, 2015.[23,24,25] In May 2009, Maine passed a law banning veal crates for calves and gestation crates for sows, effective January 1, 2011.[26] Michigan followed in October 2009, with passage of state legislation to phase out veal crates by 2012 and gestation crates within ten years.[27] In 2010, the Ohio Livestock Care Standards Board was created,[28] and the Board issued a rule effective January 1, 2018 that requires calves to be group housed by ten weeks of age.[29] In June of 2012, Rhode Island passed legislation banning both veal and gestation crates.[30]

In 2007, the American Veal Association's board of directors unanimously approved a policy that the veal industry fully transition to group housing production by the end of 2017. As reported by the industry journal *Feedstuffs*, this policy resolution was due in part to the fact that "[v]eal customers and consumers are concerned with current individual stall systems, and how animals are raised is increasingly part of customer and consumer purchasing decisions."[31] Progress toward this goal has been substantial. In 2012, an American Veal Association (AVA) survey found that 70 percent of veal calves raised by AVA members would be group housed by the end of the year.[32]

In January 2007, two of the nation's largest veal producers, Strauss Veal[33] and Marcho Farms,[34] both announced corporate policies to convert their operations to crate-free group housing within 2-3 years due to animal welfare concerns. As reported by *Meat Processing*, Strauss Veal & Lamb International "is committed to raising veal calves in a more humane manner. The company's goal is to be 100-percent converted to raising calves by the European-style, group-raised method within the next two to three years." Randy Strauss, co-president and CEO, stated to the industry journal that "this is the right thing to do...The traditional way of raising veal calves involves putting each calf in an individual stall. This practice is increasingly being frowned upon by a growing number of customers and consumers alike throughout the world."[35] Strauss Veal & Lamb is now free of crates and tethers.[36,37] By 2010, 50% of calves at Marcho Farms were kept in some sort of loose housing arrangement.[38]

After a comprehensive two-year study, the independent Pew Commission on Industrial Farm Animal Production, a project of The Pew Charitable Trusts and the Johns Hopkins Bloomberg School of Public Health chaired by former Kansas Governor John Carlin and including former U.S. Agriculture Secretary Dan Glickman, concluded that veal crates should be phased out:

> After reviewing the literature, visiting production facilities, and listening to producers themselves, the Commission believes that the most intensive confinement systems, such as restrictive veal crates, hog

> gestation pens, restrictive farrowing crates, and battery cages for poultry, all prevent the animal from a normal range of movement and constitute inhumane treatment.[39]

Despite important movement toward the group-housing of calves raised for veal by U.S. and European industries, legislative bodies, and consumers, individual housing and restrictive tethering of calves are not the only aspects of veal production that degrade calf welfare. Many customary veal industry practices fail serious scientific examination of their impacts on calf health and well-being.

Indeed, research has shown that many of the welfare problems associated with customary U.S. veal industry practices could be substantially reduced or eliminated by group housing on straw, teat-feeding, and the provision of solid feed. In a study on the effects of different types of husbandry on calf behavior, Webster *et al.* concluded that "the practice of rearing calves for veal on teats and in groups appears to be 'natural' in the sense that their behavior is, in many respects, similar to that of calves at pasture with their mothers."[40] Andrighetto *et al.* conducted a similar study and determined: "Group pen calves had the opportunity for locomotion and social behaviour and were allowed to adopt more comfortable resting postures. The improved welfare of calves kept in group pens was confirmed by the higher haemoglobin levels at the end of the growing cycle."[41] Sabbioni *et al.* found that group-housed calves had higher growth performance and better food conversion ratios than individually housed calves. They concluded that the lower incidence of stress in the group housed calves, as confirmed by lower cortisol levels, may be the reason for their lower energy consumption.[42]

As well, in its *Report on the Welfare of Calves*, the European Commission's Scientific Veterinary Committee (SVC) wrote that "general comparisons indicate that the housing of calves in individual pens, and the tethering of calves, result in problems for their welfare which are significantly reduced when the calves are group-housed on straw."[43] In a study on the welfare impacts of solid feed supplements for veal calves, Morisse *et al.* concluded that supplying calves with straw-cereal pellets helped reduce non-nutritive chewing and was "positive for the physiological aspects of welfare."[44] Cozzi *et al.* found that providing solid feed to veal calves promoted forestomach development and improved calves' health status, with fewer iron treatments for anemia and medical treatments for respiratory and gastrointestinal diseases necessary.[45]

In sum, a review of the welfare of calves in veal units reported: "Although calves are sucklings of social-living ruminants, veal calves are not allowed to suck, to have a social life or to ruminate. This, added to anaemia in order to obtain white meat, and the high rate of morbidity caused by high density of the animals, sums up the welfare problems which arise."[46]

Impacts of Unnaturally Early Weaning

Cows, like all mammals, produce milk to feed their young and, as such, must give birth to a calf for lactation to begin. On typical commercial dairy farms, cows are impregnated and calve on a yearly cycle for milk production, and calves are usually separated from their dams within a few hours of birth.[47] Female calves to be used as replacement dairy cows are raised in individual pens and fed milk replacer until 4-12 weeks old when they are moved to group pens and weaned onto solid food.[48] As male calves are often not desired breeds for beef production, they are commonly sold to the veal industry, primarily through livestock auctions.[49] According to the American Veal Association, "The special fed/milk fed veal industry was born in the United States in the mid 1960's [*sic*] in part, as a result of a need to relieve the US dairy industry of its unneeded byproducts."[50]

In natural cattle herds, dam and calf forge very strong and long-lasting bonds. Reinhardt and Reinhardt studied cow-calf relationships in a herd of semi-wild Zebu cattle (*Bos indicus*) over five years and found that "all cows preferred their daughters and sons over non-related calves as licking and as grazing partners for several years." The birth of a second, third, or even fourth calf failed to disrupt the close association between the cow and her older offspring. Female calves remained attached to their dams even after having themselves calved once or twice, and relationships between cows and their male offspring were evident after four and one-half years, past the son's sexual maturity.[51] Vessier *et al.* observed similar behavior in a herd of domestic beef cattle (*Bos taurus*). The cow and her yearling calf had more contacts and stayed closer to each other than did unrelated

cows and yearlings, and that close bond remained unbroken even after she gave birth to a new calf. The presence of the yearling did not alter the establishment of the maternal bond with the newborn calf.[52]

Maternal Deprivation

The routine early separation of cows and their calves in the dairy and veal industries is distressing for both.[53] Hudson and Mullord found "that 5-min contact with a calf immediately post partum is sufficient for the formation of a strong, specific maternal bond with that calf."[54] Calves separated from their dams at birth, as observed by Lidfors,[55] were less active and vocalized and licked themselves more than calves remaining with their mothers. Marchant-Forde *et al.* reported that calves separated from their dams 24 hours after birth recognized and responded to recordings of their dams' calls 24 hours after separation, with the cows' vocalizations eliciting cardiac and behavioral responses in their calves.[56]

In its 1995 *Report on the Welfare of Calves*, the SVC concluded: "The best conditions for rearing young calves involve leaving the calf with the mother in a circumstance where the calf can suckle and can subsequently graze and interact with other calves."[57]

Colostrum Deficiency and Impaired Immune Function

Newborn calves have no antibodies against infections and are entirely dependent on immunoglobulin in mother's milk for immunological protection.[58] Colostrum, the milk dams produce during the first few days after calving, is especially high in immunoglobulin. Adequate intake of colostrum is critical for the future health of the calf, as those with low concentrations of absorbed immunoglobulin are more susceptible to diarrhea.[59] The routine practice of removing newborn calves from their dams within a few hours of birth may jeopardize this important transfer of immunoglobulin.

Although colostrum is collected from recently calved cows, in top dairy-producing states such as California, it is often sold to facilities specializing in raising female calves for the dairy industry,[60] as their long-term health is considered to be of greater value than that of male calves reared for veal. Surveys of U.S. veal farms confirm that many calves do not receive adequate colostrum. Stull and McMartin, in a study of western U.S. veal facilities, reportedly found that only one in five (20%) of calves entering veal units had received adequate colostrum.[61] Stull and McDonough reported similar results after their evaluation of the welfare of calves at ten commercial U.S. veal farms, determining that only 22% had received adequate transfer of colostral immunoglobulins, leading them to conclude that "[t]he major factor likely to adversely affect the welfare of the veal calf was an inadequate immune system on its arrival at the veal facility."[62]

The colostrum delivery method is important as well. Lidfors found that calves who receive colostrum by suckling their dams have lower mortality rates and higher serum immunoglobulin concentrations than those given colostrum from an open bucket.[63] Weary and Chua found that calves kept with their dams for four days after birth had fewer bouts of diarrhea during the first three weeks of life than calves separated at six hours or one day, despite the fact that all the calves were bottle-fed colostrum within 24 hours of birth.[64] Metz and Metz showed that dam-reared calves defecate and urinate earlier after birth than artificially raised calves, likely as a result of frequent licking of the calf by the dam, and concluded that the early removal of the meconium (first excretion of feces) by the dam promoted colostrum intake and digestive functions in the calf.[65] However, calves of highly productive dairy cows are not always able to ingest adequate amounts of colostrum to keep them healthy through natural nursing.[66,67,68,69] The reasons for this include ineffective or delayed nursing caused by mastitis (a common bacterial infection of the udder) or other illness of the dairy cow, and her prevailing physical characteristics such as low pendulous udders and large teats.[70]

Denial of Natural Sucking Behavior

On most U.S. commercial veal farms, calves are bucket-fed liquid milk replacer twice per day, in contrast to the four to ten daily suckling sessions they would naturally have with their dams.[71] According to Donald Broom,

Colleen Macleod Professor of Animal Welfare at the University of Cambridge Department of Clinical Veterinary Medicine, the biological mechanisms that have evolved in order for calves to receive nutrients are searching behaviors, which should result in finding a teat, followed by licking and sucking to ingest milk. These behaviors are not eliminated if the gut is filled with milk—that is, the licking and sucking behavior itself is greatly important to the calf.[72] Hammell *et al.* found that calves who were bucket-fed milk replacer *ad libitum* sucked an artificial, dummy teat that did not supply milk for 13 minutes a day and that the sucking of the dummy teat often interrupted milk-drinking. The researchers concluded that "[t]his study underlines the strong need for sucking in the young calf. Sucking is maintained even while not rewarded by milk, and it can even interrupt milk drinking. The response is not even cancelled by satiation with milk."[73] Sucking is also important for the release of metabolic, gastrointestinal hormones that aid the digestive process and are thought important for satiety.[74]

In young mammals, the motivation to suck is assumed to be strong, as under natural conditions their survival would depend on it. Denial of this important, instinctive behavior by bucket feeding, for example, often results in non-nutritive sucking of such objects as the enclosure or tether, or of other calves,[75] known as cross-sucking. Cross-sucking is typically directed at the ears, mouth, navel, scrotum, and prepuce, and occurs primarily within 10-15 minutes after milk feeding.[76] Cross-sucking, which is believed to increase disease transmission,[77] has never been reported in calves raised by their dams or nurse cows.[78] Tethering is a common intervention used to prevent cross sucking. Numerous studies, however, have shown that providing calves with an artificial teat to satisfy their need to suck, as well as fibrous foods such as hay, largely eliminates cross-sucking in group-housed calves.

In a 2002 study published in the *Journal of Animal Science*, the behavior of bucket-fed calves was compared with those fed from an artificial teat.[79] During the feeding, bucket-fed calves had higher heart rates than teat-fed calves and, after the meal, engaged in non-nutritive sucking of the bars, themselves, and their conspecifics. Teat-fed calves took longer to consume the milk replacer and laid down more quickly after the meal. The researchers concluded that "teat-feeding reduces non-nutritive oral activities after the meal and induces a calmer state [in the calves] than bucket-feeding."[80] Another study found that feeding calves through an artificial teat with a small orifice (to slow flow rate and increase sucking time), combined with the provision of hay at the end of a milk meal, greatly reduced cross-sucking in group-housed calves.[81] These results echo previous findings that providing milk through an artificial teat as well as supplying hay significantly reduces non-nutritive sucking after a milk meal.[82] Free access to water around meals can also help reduce the occurrence of nonnutritive oral behavior.[83]

In the EU, where group housing of calves raised for veal is required after eight weeks of age,[84] tethering of group-housed calves for one hour following each milk meal is permitted to help reduce cross-sucking.[85] However, a 2003 review of the effects of feeding method on cross-sucking in group-housed calves concluded: "[T]he best way of preventing cross-sucking is to provide an outlet for the natural motivation to suck in connection with ingestion of milk….From an animal welfare point of view, the use of milk feeding methods that provides [*sic*] an outlet for the motivation to suck is preferred to tethering after the milk meal. Firstly, because a tethered animal may feel frustrated if they are highly motivated, but not able, to suck....Moreover, sucking in itself has beneficial physiological consequences for the calf in relation to digestion."[86]

Impacts of Diet

Cattle are ruminants, animals who digest their food in two stages. They have evolved to efficiently digest grass and other fibrous plants by chewing and swallowing once, regurgitating later, and chewing again at their leisure,[87] a practice commonly known as "chewing the cud." Calves raised outdoors begin to eat grass and ruminate after a few weeks of age; by four months, the young animals may spend six hours a day grazing and several hours ruminating.[88]

In contrast, the majority of calves in the U.S. veal industry are fed only liquid milk replacer.[89] This unnatural diet, low in fiber, is also formulated to be low in iron to pale the calves' flesh.[90] Consumers are generally

believed by the veal industry and the retail sector to assess veal quality on color, with whiter meat commanding higher prices.[91] As the color of the calves' flesh is greatly influenced by the amount of iron in the diet, feeding animals exclusively milk replacer achieves the desired minimal iron intake.[92]

Feeding calves all-liquid diets limits the physiological development of the forestomach and the normal process of rumination. Cozzi *et al.* compared the growth performance and forestomach development of calves fed only milk replacer with calves fed the same liquid diet plus 250 g (8.82 oz) of dried beet pulp or wheat straw. In calves provided solid feed in addition to milk replacer, a clear progression in forestomach development was observed, as well as a marked reduction in the number of hairballs.[93] The finding is particularly noteworthy as large hairballs can clog the rumen, resulting in digestive problems and even death.[94] Morrisse *et al.* studied changes in the rumen of calves fed either an all-liquid diet or ones supplemented with 10-25 kg (22-55 lb) of pelleted straw and cereals. Compared with calves on the all-liquid diet, both groups of calves on pellet-supplemented diets showed increased reticulo-rumen weight, the presence of small papillae that help nutrient absorption from food, and significantly fewer hairballs.[95]

The SVC recommends: "Every calf should be fed a daily source of long fibre to stimulate the development of villi in the rumen, and the long fibre should be supplemented with a fermentable material such as starch to maintain the microbial flora of the gut. They should receive a minimum of 100 g [3.53 oz] of roughage per day from 2 to 15 weeks of age, increasing to 250 g [8.82 oz] per day from 15 to 26 weeks of age but it would be better if these amounts were doubled."[96] This recommendation forms the legal minimum requirement for fibrous food for calves raised in the United Kingdom,[97] while for the remaining European Union member countries, the legal minimum requirement at 2 weeks of age is slightly lower, at 50 g (1.76 oz) per day.[98]

Iron Deficiency

The already low iron content of all-liquid milk-replacer diets commonly fed to calves raised for veal is reduced at the beginning of the fattening period.[99] A deficiency in iron can inhibit the body's ability to produce red blood cells and result in reduced hemoglobin concentrations and eventually iron-deficiency anemia. Stull and McDonough's evaluation of calf welfare at ten commercial U.S. veal units found that one in four animals was marginally anemic (blood hemoglobin concentration under 4.9 mmol/l) and one in ten was clinically anemic (blood hemoglobin concentration under 4.34 mmol/l) when sent for slaughter.[100]

According to the SVC's *Report on the Welfare of Calves*, many studies "indicate impaired performance and an increased disease susceptibility in calves whose blood haemoglobin concentration is below 4.5 mmol/l….It is therefore recommended that calves should be fed sufficient dietary iron to maintain the haemoglobin concentration at a minimum of 4.5 mmol/l until slaughter."[101] In 2006, the European Food Safety Authority (EFSA) recommended blood hemoglobin concentrations to be maintained at a minimum of 6.0 mmol/l throughout the life of the calf,[102] although the European Union legal minimum remains at 4.5 mmol/l.[103]

Numerous scientific studies have linked milk-replacer diets with insufficient iron levels. For example, Welchman *et al.* compared blood hemoglobin concentrations in calves fed milk replacer either alone or with solid feed of varying iron content and found that calves raised exclusively on milk replacer had levels indicating iron-deficiency anemia at 16-20 weeks; only calves who received solid feed with substantial iron content showed hemoglobin concentrations similar to calves raised for beef production.[104] Reece and Hotchkiss also reported the development of iron-deficiency anemia in calves fed milk replacer only, both in individual housing and group housing, compared to an increase in hemoglobin concentration over 15 weeks in calves fed hay and grain.[105] Similarly, the study by Morrisse *et al.* found that calves on milk-replacer diets supplemented with either 10-25 kg (22-55 lb) of solid food had higher hemoglobin concentrations than those fed exclusively milk replacer; however, only those calves receiving the supplemental 25 kg (55 lb) of solid food were in conformity with the EU minimum requirement.[106] In Cozzi *et al.*'s investigation, calves receiving milk replacer plus 250 g (8.82 oz) of dried beet pulp or wheat straw per day required fewer iron treatments for anemia than those fed milk replacer only and needed fewer medical treatments for respiratory or gastrointestinal diseases, and only those calves fed beet pulp had a darker carcass at slaughter, not those given wheat straw.[107]

Inactivity may also contribute to iron deficiency, which is of particular concern for individually housed calves who are typically tethered and severely restricted of movement. Although both group- and individually housed calves on milk replacer-only diets developed anemia in Reece and Hotchkiss' study, those animals in group housing had higher hemoglobin concentrations than calves in stalls.[108] Xiccato *et al.* also found that group-housed calves had higher hemoglobin concentrations than individually housed calves even though both groups of calves received the same diet.[109] The authors of both studies concluded that the higher physical activity of group-housed calves led to a muscle oxygen deficit that stimulated red blood cell production, whereas the persistent inactivity of individually housed calves did not stimulate red blood cell production as the muscles were not oxygen-deprived.[110]

Stereotypic Behavior

On all-liquid diets, calves cannot perform the normal behaviors of rumination and chewing. The natural instinct of calves to ruminate and manipulate material with their mouths is so strong that milk-fed calves will perform sham activities, attempting to ruminate despite not having ingested roughage and engaging in vacuous oral motions.[111] As a result, calves develop oral activities such as tongue-rolling and sucking, licking, and biting inanimate objects.[112] Social deprivation,[113] the inability to groom the hindquarters,[114] and the inability to explore[115] can exacerbate purposeless oral actions in individually housed calves. Purposeless oral behavior is identified by animal welfare expert Donald Broom as "abnormal behavior that is not shown by calves that can cope well with their environment." "[J]ust as in man, zoo animals or sows," Broom has written, "stereotypies are indicators of poor welfare."[116]

The provision of solid feed, particularly hay, reduces the frequency and incidence of some non-nutritive oral activities such as chewing.[117] Mattiello *et al.* found purposeless oral behaviors were more common in calves fed only milk replacer and lowest in calves also fed straw. By the end of the fattening period, however, the addition of 250 g (8.82 oz) of straw per day, the EU legal minimum, no longer prevented abnormal oral behavior as this amount was presumably unable to satisfy the needs of growing calves. The researchers concluded that 250 g (8.82 oz) per day of fibrous food for calves aged 15-20 weeks is inadequate to reduce abnormal oral behavior at the end of the fattening period.[118]

Vessier *et al.* also found that provision of solid feed largely reduced the amount of non-nutritive nibbling performed by calves. Tongue-rolling, however, seemed to come from a cumulative effect of lack of roughage and social deprivation, since it occurred mainly in calves both housed in individual stalls and fed milk replacer.[119] Webster *et al.* identified a similar cumulative effect of social isolation and lack of roughage when studying different rearing systems on calf behavior. Calves in individual stalls without solid food spent 16% of their time in purposeless oral activity, while the mean for all other groups, including those group-housed without solid food, was 2%.[120]

Abomasal Damage

Stress in mammals is often reflected in stomach-wall damage, and calves raised for veal frequently show damage of the abomasal wall (the lining of the fourth compartment of the stomach).[121] Differences in occurrence and degree of ulceration may be related to coping capabilities among calves.[122] Stereotypic behavior such as tongue-rolling may help individually housed calves cope in an environment that lacks social and environmental stimulation by increasing sensory stimulation and muscular and skeletal activity, and giving them a sense of control over their relationship to the environment.[123]

Wiepkema *et al.* studied the relationship between behavior and abomasal damage in calves. In their study, all of the calves were housed in individual crates and bucket-fed milk replacer twice daily with no solid food supplements. At slaughter, 67% showed abomasal damage, either ulcers, scars, or both. However, those calves who had developed tongue-rolling (33% of the animals in the study) had no ulcers or scars, while all of the calves who had not developed tongue-rolling (67% of the animals) did have ulcers or scars. The occurrence of

biting or licking had no relationship to abomasal damage, suggesting that these abnormal oral behaviors are more related to other factors, such as lack of solid feed, than to stress.[124]

While coarse straw as a feed supplement has been shown to enhance abomasal damage, calves fed milk replacer only also develop this damage.[125] According to the SVC, when calves raised for veal receive a solid feed supplement that is balanced for starch, fiber, and degradable protein, the amount of abomasal damage is less than in conventional all-liquid diets.[126]

Impacts of Intensive Confinement

Presently, the most common U.S. veal production housing system is the open-backed stall in which calves are separated by wooden, slatted partitions and individually tethered around the neck by a 0.6-0.9 m (2-3 ft) chain or rope affixed to the front of the enclosure.[127] In its 1995 report, the SVC concluded:

> The welfare of calves is very poor when they are kept in small individual pens with insufficient room for comfortable lying, no direct social contact and no bedding or other material to manipulate….Every calf should be able to groom itself properly, turn around, stand up and lie down normally and lie with its legs stretched out if it wishes to do so.[128]

Neither the open-backed stall nor the individual pen permit all of these behavior patterns.

Restriction of Movement

Among the greatest deprivations individually housed calves suffer are their ability to adopt their preferred lying posture and to stand and lie down naturally.[129] As a primary purpose of lying down is to relax certain muscles, the restrictions that stalls and tethers place on most normal lying postures of calves may impede full relaxation of the body and prevent the animals from lying comfortably.[130] For all young mammals, rest is critical, and sleep disruption may occur if certain lying positions cannot be adopted.[131] Lying posture is also very important for thermoregulation. Stretching out the legs laterally can help maximize surface area to prevent overheating.[132]

Several studies have shown that calves tethered in stalls or confined in narrow pens cannot adopt the postures they would choose for most effective body temperature regulation or comfort. In Stull and McDonough's evaluation of the welfare of calves in ten commercial U.S. veal units, nine facilities used stall and tether systems and one used group housing. The researchers found that group-housed calves extended one or more legs when lying down 13% of the total lying time, whereas calves in stalls extended their legs only 2% of the lying time.[133] These results were echoed by Andrighetto *et al*. who found that individually housed calves spent more time lying with all four legs bent, while group-housed calves more frequently adopted postures with one or more legs outstretched.[134]

Smits and de Wilt found that the incidence of lying with the head turned back on the shoulder or belly decreased more rapidly over time for calves in individual pens than for those group-housed, and the occurrence of lying with the head reclined forward on the floor increased over time in the individual, but not group, pens. The researchers concluded that lying with the head turned backwards is thwarted by the sides of the pen.[135] Similarly, Webster *et al.* determined that compared with those in group pens, calves in individual pens spent less time sleeping at two-weeks-old and concluded that their inability to adopt the normal sleeping posture with the head tucked into the flank may be a factor.[136]

Both individual pens and open-backed stalls used with tethers restrict movement. Wilson *et al.* compared the stress and behavioral effects of enclosed pens without tethers and individual partial stalls with tethers. Both pens and stalls measured 179 cm (70.5 in) in length and came in three different widths: 56, 66, and 76 cm (22, 26, and 30 in). They found no consistent differences in postures or behavior among calves in the two individual housing systems, however calves housed in the narrowest pens 56 cm (22 in) were unable to extend their legs while recumbent, and had difficulty changing from a lying to a standing position. Tongue-rolling and

purposeless chewing were exhibited in both stall and pen treatments, as well as increased cortisol levels over time, which suggests an increased degree of stress in individual housing designs regardless of the use of tethers. The researchers concluded: "Few consistent differences were observed in stress indicators…in special-fed veal calves as a result of tethering in partially divided stalls vs nontethering in enclosed individual pens."[137]

Tether and stall systems are no more welfare-friendly than individual pens, and several studies have shown them to be similarly poor for calf welfare. Van Putten compared the behavior of 150 calves housed in the same building but kept in three different housing systems: individual crates, individually tethered between partitions, or in groups of three. No significant differences in measured behavioral patterns were found between the crated and tethered calves. A tendency towards greater grooming frequency noted for the tethered calves was explained by the fact that the observed grooming behaviors were often only failed attempts at grooming aborted due to the shortness of the chain around their necks. The authors concluded: "Tethering is not a real solution [from a welfare perspective] because of the restriction of grooming and lying down."[138]

Le Neindre *et al*. also compared the behavior of individually tethered versus group-housed calves and found that those who were tethered had difficulty stretching their legs and interacted less with other calves. The researchers concluded: "Tethering for the entire resting period is not a good system for maintaining a minimum acceptable standard of welfare for veal calves because it limits their activities."[139]

The 2006 *Scientific Report on the Risks of Poor Welfare in Intensive Calf Farming Systems* by the EFSA (an update to the SVC's 1995 *Report on the Welfare of Calves*) echoed this conclusion, stating: "Tethering always causes problems for calves. Calves housed in groups should not be tethered except for periods of not more than one hour at the time of the feeding of milk or milk substitute. Individually housed calves should not be tethered."[140] This opinion was enshrined in EU law and went into effect on January 1, 2007.[141]

Unsuitable Flooring in Open-Backed Stalls and Individual Pens

Flooring type has influence over calf movements, particularly getting up and down, lying, and resting. Most calves raised for veal in the United States are kept on bare wooden slats or a plastic-coated metal grating,[142] while under U.K. law, calves must be provided "appropriate bedding" from birth until slaughter.[143] When cattle are allowed to choose between different floor types, they reportedly prefer deep litter to slatted floors, especially for resting,[144] indicating welfare would likely be improved with the provision of bedding over barren flooring.

Wooden slatted floors absorb liquid from manure and become slippery,[145] making it difficult for calves to get up and down,[146] which can lead to leg disorders. According to the SVC's report, studies have found that calves raised for veal who were housed on wooden slatted floors showed damage of the carpal joints at slaughter, whereas those kept on rubber flooring slipped less and had less damage to their carpal joint.[147]

Given the importance of adequate rest for growing animals, a suitable floor is particularly important for calves, particularly those raised in barren enclosures without appropriate sleeping and resting quarters. Webster *et al*. compared the behavior of calves in several husbandry systems, including at pasture with their dams, group-housed in straw yards, in individual pens on concrete floors, and in individual crates with slatted wooden floors. The researchers found that, compared to calves in any other housing regimen, those in wooden crates on slatted floors spent less time lying down and almost twice as long standing idle, often appearing to be standing insecurely, suggesting they were reluctant to change positions possibly because they found the surfaces slippery.[148] Indeed, reported the SVC, slippery slatted floors may result in decreased frequency of lying bouts.[149]

Lack of Exercise

Calves, like all young mammals, have evolved with a need for regular exercise, which helps reduce problems associated with inactivity,[150] such as abnormal bone and muscle development and joint disorders. Intensive confinement systems prohibit exercise and normal muscle growth in order to produce tender veal.[151]

If healthy calves are raised in an environment with ample space to play vigorously, they will gallop, buck, and kick.[152] If housed with other calves, they will also engage in play fighting.[153] In contrast, when closely confined for prolonged periods, these normal behaviors are frustrated, resulting in an intensification of the drive to perform these activities.[154]

Dantzer *et al*. compared the behaviors of calves tethered in stalls with group-housed calves when released into an open field. Tethered calves exhibited higher activity scores and spent less time immobile, suggesting a compensatory reaction to deprivation of these activities when restrained.[155] Similarly, Dellmeier *et al*. found that calves housed in individual stalls or pens for six weeks exhibited more locomotive and social behavior when released in an open field than calves housed in groups. Only stall- and pen-confined calves stumbled and fell during the field test, suggesting that prolonged inactivity had inhibited muscle development and coordination. The researchers concluded that "[t]he greater incidence of highly active behaviors observed for the more confined calves during open field testing, despite their tendency to stumble and fall, attests to the strength of motivation induced by ethostasis of locomotion."[156]

Social Deprivation

Cattle are social animals who obtain physical, physiological, and psychological comfort from each other.[157] Under natural conditions, calves from two weeks of age start to associate in groups during the day while their mothers forage and begin to form relationships with their peers.[158] In Reinhardt and Reinhardt's study of semi-wild Zebu cattle, the majority of calves formed close relationships with one or two other non-related calves of a similar age and maintained those bonds over three or more years. The scientists concluded: "In natural cattle herds the social structure is based on matriarchal families which in their turn are interconnected by means of friendship relationships between non-kin partners."[159] For calves raised without their mothers, social contact with other calves is particularly important.[160]

Tethering calves in open-backed stalls prevents the animals from adequate social contact. Holm *et al.* investigated calves' motivation for access to full social contact as compared with head-only contact. The researchers found that while calves were willing to work to gain access to both types of contact, they were more motivated to gain access to full social contact than head-only contact and concluded that "calves' welfare may be threatened if they are not allowed to perform social behaviours, and since motivation is apparently higher for full social contact than for head contact it is likely that their welfare will be better if housed in groups…."[161]

When calves are confined, their motivation for social contact intensifies. Dellmeier *et al.* studied the effect of four methods of confinement on calf behavior: tethered in individual stalls, individually penned, in outdoor hutches open at one end and restrained on a 2.5 m (2.7 yd) chain, and group housed in an outdoor yard. After six weeks, the calves were individually tested in an open field in the presence of unfamiliar calves. According to the authors: "The number of social encounters in which calves engaged increased with increasing degree of confinement….Social encounters were typically initiated by licking the ears, face, or neck of another calf, rubbing foreheads together, or butting heads."[162]

Given the natural behaviors of calves, the EFSA concluded: "Since calves are social animals they should be kept in social groups wherever possible."[163]

Inability to Explore

All animals explore their surroundings in part to discover sources of danger as well as areas of retreat or escape.[164] Calves reared on pasture spend considerable time investigating their environment through visual, auditory, tactile, olfactory, and gustatory cues.[165] When tethered in stalls, however, their ability to explore is severely restricted, limited primarily to sniffing and licking the front part of the enclosure.[166] The negative impacts of denial of exploratory behavior on calf welfare were outlined in the SVC's 1995 report:

> Calves given little space, low environmental complexity and no variety in their environment have little possibility for exploration and this may result in poor welfare as indicated especially by high levels of abnormal behaviour….It is likely that the inability to explore, and to escape from perceived danger contributes to the high level of oral stereotypies, self licking and hair ingestion which occurs in calves confined in individual pens.[167]

In addition, the inability to investigate surroundings can lead to increased fearfulness in individually housed calves. de Wilt reportedly observed the behavior of calves raised for veal in various housing systems and concluded that those animals tethered in individual stalls are more easily alarmed because their ability to explore their environment is significantly restricted.[168] Similarly, Jensen *et al.* found that calves reared in individual stalls for prolonged periods are more fearful than group-housed calves. They housed calves in four different types of housing (small single pen, large single pen, small group pen, and large group pen) for three months, twice as long as Dellemeier *et al.*, and then introduced them to a novel environment. In open-field tests with an unfamiliar calf present, individually reared calves from both small and large pens were reluctant to sniff the calf and had high heart rates, and a greater percentage of individually reared calves were afraid to enter the arena than group-reared calves.[169] These findings echo the EFSA's 2006 report that stated: "Calves need to explore and it may be that higher levels of stereotypes and fearfulness in poorly lit buildings or otherwise inadequate conditions are a consequence of their inability to explore."[170]

Inability to Groom

In order to maintain hygiene and help prevent disease, animals groom themselves when necessary, principally by licking themselves. Stimuli to groom may emanate from anywhere on the body, and once grooming is initiated, there is an urge to groom the whole body.[171] Cattle naturally lick all the accessible parts of their bodies, including their hind limbs and tails, and will often rub against objects such as branches and fence posts to reach inaccessible parts.[172] Calves tethered to the front of stalls, however, are unable to rub the hind parts of their body as the design of the open-backed stall lacks objects or structures behind the animals. Licking of the hindquarters is also greatly restricted by the tether and sides of the stall. Excessive licking of the forelegs, a re-directed behavior, is common in stall and tether systems.[173]

Stress

Individual pens and stall and tether systems do not permit calves to respond to many types of stimuli, both internal, such as the need to scratch an itch, and external, such as the need to avoid a perceived threat, and, as discussed above, also frustrate many of the calves' drive-motivated behaviors, including grooming, exploring, and interacting socially. The chronic deprivation of these needs and behaviors can lead to stress.[174]

Dantzer *et al*. showed that calves tethered in stalls had higher cortisol responses to adrenocorticotropic hormone (ACTH) than group-housed calves, demonstrating that the adrenal glands of tethered calves were more active than those of loose calves, a physiological indicator of stress.[175] Similarly, Friend *et al*. found that calves tethered in stalls had higher adrenal responses to ACTH than group-housed calves, as well as increased levels of thyroid hormones and a higher neutrophil to lymphocyte ratio, another physiological indicator of chronic stress.[176] Raussi *et al.* found that the presence of another calf greatly reduced the stress of confinement for calves in the veal industry. In their study, individually housed calves who could see, sniff, touch, and lick calves in adjacent pens through open wooden partitions were compared to calves housed in pairs in larger pens. The individually housed calves had higher cortisol responses to ACTH than pair-housed calves. The scientists concluded that calves feel a need for social contact and that pair-housing can reduce the stress due to separation from conspecifics.[177]

Disease

Young calves are susceptible to pathogens and individual housing is used, in part, because it may help to reduce the transmission of pathogenic organisms by minimizing animal-to-animal contact.[178] Yet, according to Friend and Dellmeier, who examined the problems relating to artificially rearing veal calves:

> [V]irtually all crates are wooden and can readily harbor microorganisms, and the vast majority of them have slatted partitions separating calves, which would not inhibit transmission of airborne organisms. Typically calves can also touch each other's head and frequently do make oral contact and nasal contact…possibly because this is one of the few sources of stimulation available to them… Thus, there remain many avenues for transmission of disease in most crate-housing systems.[179]

Diarrhea and pneumonia are common diseases in commercial veal production facilities.[180] The stresses of transport to the livestock auction and then the veal unit, the mixing of calves from different sources, the possibility of immune compromise as a result of inadequate immunoglobulin transfer, nutritional inadequacies of an all-liquid diet, and over-intensive stocking can predispose calves to pathogens.[181] In a study of eight commercial veal units in the United States, McDonough *et al.* found that 92% of ill calves had not received sufficient transfer of passive immunity from their dams. Of those calves who died from diarrhea, all had had complete failure of immunoglobulin transfer.[182]

McFarlane *et al.* studied the effect of iron intake on the welfare of individually housed calves and found that those in all dietary regimes experienced elevated incidences of pneumonia and digestive illnesses. The lungs of all calves in the experiment showed signs of pneumonia at some point during the rearing period. As the calves were housed in individual stalls and denied solid food, the prevalence of pneumonia could have been linked to either of these factors.[183]

Waltner-Toews *et al.* found that rearing calves outdoors in individual hutches, as opposed to indoors in adjacent pens, appeared to significantly decrease both diarrhea and pneumonia rates. There was no significant difference in the incidence of disease between individually housed and group-housed calves reared indoors.[184]

Handling and Transport

Many calves, whether group-reared or tethered in a stall, endure the stress and discomfort of transport at least twice during their lifetimes. Most calves who will be raised for veal are trucked to livestock markets, where they are auctioned and then transported to the purchasing farm, though a small number may be sold directly to a veal facility.[185] After approximately 16-18 weeks[186] of fattening, the calves are transported to the slaughterhouse.

Studies have shown that transport can cause stress, fatigue, and injury. A study of the response of three-month-old calves to 18 hours of transport found reduced rumination and lying, excessive defecation and urination, and looseness of feces, all signs that the calves were stressed by both loading and vehicular movement. [187] Several studies have found that following transport calves show changes in appetite, signs of dehydration, and prolonged lying and sleeping behavior suggesting fatigue.[188,189,190] Grigor *et al.* studied the effect of nine hours of road transport on young calves and reported high plasma cortisol responses, suggesting that one or more components of the transport were stressful.[191] McCausland *et al.* examined 16,400 calves raised for veal and found that 50% had bruised stifle joints (akin to the human knee) after transport.[192]

Although some of the transport-related welfare problems, such as dehydration and fatigue, may be exacerbated by long journeys, short trips are also stressful for calves due to loading and unloading. Grigor *et al*. reported higher heart rates both during and after a nine-hour journey, as well as greater plasma cortisol concentration and plasma creatine kinase activity immediately following the trip, compared with calves slaughtered on-farm who therefore were not transported.[193]

Creatine kinase is a muscle-associated enzyme, and its concentration in blood can indicate the degree of physical exertion or muscle damage, such as bruising. The higher levels of this enzyme in the calves' bloodstream could indicate trauma at some point during the transport process—during loading, transport, and/or

unloading, and/or as a result of interaction among conspecifics. More bruised carcasses were observed in transported calves than those slaughtered on-farm.[194] These results echoed those of Van de Water *et al.*, who also found increased heart rate, plasma cortisol concentrations, and plasma creatine kinase activity in calves transported for 2-3 hours. The calves' behavior during loading—balking, reversing, and defecating—indicated the process was stressful. The researchers concluded that the entirety of the transport event, including loading, the journey, unloading, and lairage in a new environment, is stressful even if the journey portion is short, as plasma stress markers reached their maximal values within 30-60 minutes of the start of the journey.[195]

Both severe and acute stresses are known to be immunosuppressant. As a consequence, increased disease incidence, particularly respiratory disease, has been observed in transported calves.[196] Staples and Haugse reportedly found that 60.3% of calves in their study transported before two weeks old fell ill during the following four weeks and 21.7% died. Pneumonia was identified as the greatest cause of death.[197] Similarly, Stephens reportedly recorded a mortality rate of 23% among calves transported for long distances during their first two weeks of life.[198] In a review of post-transport calf mortality, Knowles concluded that "young calves are not well adapted to cope with transport and marketing, often suffering relatively high rates of morbidity and mortality, both during, and in the few weeks immediately following transport" and recommended that calves not be taken to market until at least four weeks of age.[199]

The effects of handling and transport are greater on individually housed calves than those group-reared. Trunkfield and Broom found that calves raised in stalls had higher blood cortisol concentrations after transport than calves of the same age who had been group-housed. The isolated calves had more difficulty walking and a significant increase in body temperature following transport. The researchers suggested that the increased temperature response was due in part to the trauma of walking for the first time in six months, particularly when boarding the ramp to the truck, as well as to the stress of mixing in close confinement with conspecifics for the first time.[200] Lensink *et al*. attributed the significantly higher heart rate found among individually housed calves during transport to mixing with other calves, despite the fact that the individually housed animals could see and touch each other through the slats during rearing.[201]

Slaughter

Given the heavy toll that transport takes on young calves, some arrive at the abattoir too weak to rise and walk, leaving them susceptible to abusive handling. In 2009, workers and the plant owner of the Bushway Packing plant in Grand Isle, Vermont were filmed shocking, kicking, and dragging downed calves. The plant owner also incorrectly used a captive bolt gun—meant for euthanizing calves not fit for slaughter—leaving them to die slowly.[202] In the press that followed the event, government officials stated that this kind of abuse was "inexcusable" and that abusive treatment is not representative of the industry as a whole,[203] but this claim is unsubstantiated, and further investigations of cattle slaughter and auction facilities by The Humane Society of the United States suggest that abusive and neglectful treatment of cattle may not be uncommon.[204,205]

Calves at Bushway Packing, Grand Isle, VT.
Photo by Humane Society of the United States.

According to the Humane Methods of Slaughter Act, U.S. federal law, calves should be "rendered insensible to pain by a single blow or gunshot or by electrical, chemical or other means that is rapid and effective, before being shackled, hoisted, thrown, cast or cut."[206]

In a 2004 audit of five U.S. veal slaughter plants, slaughter expert Temple Grandin reported "some very bad problems," including calves slipping on slick floors and excessive use of electric prods by truck drivers.[207] According to Grandin, the most significant welfare problem was the shackling and hoisting of live calves for kosher slaughter at one plant. There, the vocalization of the calves was scored at 25%, compared to 3% or less at the plants that stunned calves—an increase Grandin attributes to the shackling and hoisting of fully sensible calves by one back leg.[208]

Stunning techniques in cattle, especially calves, can also present welfare problems.[209] Large cattle are typically stunned using a captive bolt shot into the front of the head. When performed correctly, this method is effective,[210] causing a concussive blow to the head, tissue damage, and immediate[211] or nearly immediate[212] unconsciousness.

Electrical stunning is more commonly used on calves. [213] During electrical stunning, current is passed through the animal's brain to induce an epileptic state, as indicated by electroencephalogram recordings. In humans, there are no known instances of consciousness during an epileptic seizure of this type, and it is on this basis that animals are thought to be insensible during electrical stunning.[214] However, according to Anil *et al.*, electrical stunning of calves may produce shorter periods of unconsciousness and insensibility than with sheep or pigs.[215] Lambooy and Spanaard found that the shortest duration of unconsciousness following conventional (head-only) electrical stunning on calves was 21 seconds,[216] while others have reported periods of 45 seconds and 59 seconds.[217] As such, it can be assumed that calves may regain consciousness at some time between 22 and 60 seconds after head-only electrical stunning. Grandin surveyed several U.S. veal slaughterhouses and concluded:

> A stunning method which produces either permanent or prolonged insensibility is essential for humane stunning of calves. I have observed calves reviving during bleeding in slaughter plants when conventional electric stunning was used. Calves may revive even if they are bled immediately after conventional electric stunning.[218]

Grandin recommends the use of cardiac arrest stunning. In this method, electrodes are placed on either side of the calf's head and back or leg. Electric current runs through the brain and the heart simultaneously to produce unconsciousness and stop the heart, so the calf will not regain consciousness before being bled out. Sufficient amperage is important to ensure cardiac arrest. Blackmore and Petersen[219] reported that a head-to-leg stunner set at 2 amps for 5 seconds produced 100% cardiac arrest in calves, whereas 0.8 amps for 5 seconds was successful in just over half the calves. Grandin recommends a minimum amperage of 1.25, wetting the skin of the calves, and using good electrodes, but states that many variables will change amperage requirements and settings higher than 1.25 amps will be required in many slaughter plants.[220] It is imperative that stunning equipment be routinely maintained and properly used,[221] or stunning may not be effective.

Conclusion

Presently, the customary veal production practices in the United States—namely housing in close, restrictive confinement, social isolation, deprivation of solid food, and provision of an iron-deficient diet—have been widely criticized on animal welfare grounds and are illegal throughout the European Union. The welfare of calves raised for veal can be dramatically improved with group housing on straw, provision of solid feed, and teat-feeding of milk, all of which have been shown to significantly reduce the suffering of calves during rearing. Closer scrutiny of calf slaughter is also in order, and abusive and neglectful treatment should not be tolerated. It is imperative that we continue to raise the bar for the care and treatment of veal calves, as legislators, food retailers, consumers, and the industry itself have already begun to demand.

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VITELO: SISTEMA DE PRODUÇÃO DE CARNE DE VITELO

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A demanda de carne bovina qualidade no Brasil e no mercado mundial é crescente. Existe uma grande preocupação das pessoas com as elevadas taxas de colesterol no organismo o que levado ao consumo de carne bovina com menores índices de gordura. Essa possibilidade de atingirem novos e promissores mercados, principalmente o internacional, depende, fundamentalmente, do empenho de todos os pecuaristas para rápida modernização dos sistemas de produção, aplicando as tecnologias disponíveis no Brasil e no Exterior, visando à produção de carne que atenda os padrões de qualidade e segurança alimentar.

A produção e o consumo de carne de vitelo são amplamente difundidos em alguns países da Europa, principalmente, na Holanda, França, Itália, Espanha e Portugal e em menor escala nos países da América do Norte. No entanto, o mercado europeu é bastante rígido quanto à qualidade da carne e com relação aos sistemas de produção.

A utilização de machos leiteiros é bastante difundida e desenvolvida nos países Europeus, onde estes animais são utilizados para produção de carne e considerados uma importante fonte de renda para os produtores de leite e para a cadeia produtiva da carne, pois, aproximadamente, 20 % da carne bovina consumida, nesses países, são oriundas da produção de vitelos, que cresce a cada ano, na busca por carne de coloração mais clara, tenra e própria para preparo de pratos sofisticados.

O vitelo produzido pelos países Europeus é de carne branca ou rosa, sendo esta última para atender preferências de determinados mercados. Todavia, a carne branca responde por

cerca de 90% da carne de vitelo comercializada no mercado interno europeu e no mercado externo, principalmente para o Japão e mais recentemente para China (grande mercado em expansão).

Porém, aspectos relacionados com o sistema de criação definem o vitelo, e, por conseqüência, o preço. Deste modo, os valores pagos às carcaças de vitelos dependem principalmente de sua coloração.

A coloração é um fator importante para a seleção de carne a ser consumida. Com isso, a cor de carne é fundamental na criação de vitelos e os preços podem variar de até 30% de acordo com sua tonalidade. Contudo, em termos gerais, o preço dos cortes de carne de vitelos é superior ao de outros tipos de carne, o que afeta diretamente a difusão e o consumo de vitelo.

No caso de produção de carne branca o objetivo deste sistema é obter bezerros com 115 a 200 kg de peso vivo (70 a 125 kg de carcaça), com aproximadamente, 3 a 4,5 meses de idade. Para tanto os bezerros precisam ganhar, em média, mais de 900 g/cabeça/dia, com boa conversão alimentar. A carne dos animais deve apresentar uma coloração rosa pálida, e uma excelente textura, maciez e pouca gordura. O sistema de alimentação consiste em alojar os animais em baias individuais, e alimentá-los exclusivamente com dieta líquida, preferencialmente um substituto do leite, que deve ser deficiente em ferro. Na Holanda o sistema inicia com consumo de 125 a 200 g de substituto de leite para 1 a 2,5 litros de água e finaliza com 1400 a 1500 g/dia de substituto para 8,5 a 9 litros de água.

A carne rosada é produzida com bezerros de 5 a 6 meses de idade, com um peso vivo de 225 a 250 kg ou 135-150 kg de carcaça. Para atingir este peso os animais precisam ganhar, em média, 1,2 kg por dia, com boa conversão alimentar. O sistema de alimentação é baseado no uso de substituto do leite durante as primeiras semanas de vida do bezerro, fazendo-se o desaleitamento o mais rápido possível, e utilizando-se então, um concentrado fornecido à vontade, e pequenas quantidades de volumoso.

Vale ressaltar que, tanto o sistema de produção de carne branca ou rósea, o maior desafio é a elevada taxa de mortalidade. Para reduzir a mortalidade é necessário protocolo de vacinação e higienização bastante rigoroso para conseguir atingir o índice máximo de 8%, como ocorre na Europa.

No Brasil, a criação de bezerros machos em granjas leiteiras especializadas atinge número pequeno de animais nascidos, pois o principal objetivo de sua criação é de servirem como reprodutores. Dessa forma, apenas alguns poucos são escolhidos, sendo o excedente sacrificado logo após o nascimento. O descarte de bezerros provenientes de rebanho leiteiro ocorre pelas seguintes razões: i) concorrem com as fêmeas por área, alimento e manejo; e ii) baixa remuneração do bezerro, quando comercializado para recria e terminação, devido ao pior acabamento da carcaça.

Em levantamento realizado pela Coordenadoria de Desenvolvimento Agropecuário do Estado de São Paulo, verificou-se um potencial muito grande para a criação de bezerros machos, cerca de 170 mil animais/ano, que poderiam resultar na produção de cerca de 11 mil toneladas de carne de vitelo, gerando uma receita estimada em R$ 54 milhões.

Nesse contexto, o aproveitamento do macho leiteiro apresenta-se potencialmente como fator de agregação de renda para o produtor de leite, sobretudo para médios e pequenos produtores.

Estes animais, também, se aproveitados, poderiam contribuir para reduzir a ociosidade da indústria frigorífica e para colocar no mercado interno e externo, um produto de qualidade, que atende às exigências de um determinado segmento do público consumidor que demanda carne de alta qualidade.

Existe um mercado em potencial, mas ainda restrito, localizado principalmente nos grandes centros. Desta forma, é interessante criar alternativas assentadas em bases tecnológicas adequadas às condições do país. Obviamente, esse sistema de produção deve ter preços diferenciados, o que daria bases para buscar alternativas no sentido de atuar sobre aqueles fatores que, de alguma forma, está influenciando negativamente o sistema de produção.

O elevado custo de produção dos vitelos leva a um alto preço de comercialização, o que impede a expectativa de sensível incremento na demanda por esse tipo de carne, entretanto, algum aumento de procura pode ser esperado em virtude de aspectos como aumento da urbanização, estabilidade econômica, aumento da renda per capita brasileira e exportação.

Além disso, com a intensificação da pecuária de corte, bezerros oriundos de raças européias precoces (Angus e seus cruzamentos) representam alternativa de produção

importante para aumentar a produtividade da pecuária, com atendimento a um mercado mais exigente pela carne de qualidade e com menor teor de gordura.

Estes animais são denominados superprecoces e/ou ultraprecoces. Os animais são desmamados aos três meses e abatidos aos sete com peso vivo em torno de 280-300 kg e para tanto o ganho de peso vivo diário deve ser ao redor de 1,2 kg. A carne destes animais está ganhando a simpatia dos exigentes europeus e do mercado nacional. Com o nome de "rose veal" (Vitelo de carne rósea), o produto apresenta a coloração exigida na carne, que ainda conta com uma excepcional cobertura de gordura (2 a 3 mm). Para o criador, as vantagens são grandes, já que tem um animal abatido superprecocemente, possibilitando a liberação da vaca mais rapidamente, facilitando a sua recuperação para a gestação futura, trabalhando dentro de um mercado especializado.

Se considerarmos o tamanho do rebanho leiteiro nacional, o forte apelo comercial da carne brasileira ("boi verde", criado a pasto) e os custos de produção extremamente competitivos em relação aos custos praticados na Europa e nos Estados Unidos, o Brasil apresenta-se como potencial fornecedor mundial de carne de vitelo, tanto de coloração branca como rósea.

Mais informações podem ser obtidas com os pesquisadores do Polo Regional de Desenvolvimento Tecnológico dos Agronegócios da Alta Mogiana (Colina – SP), Ricardo Dias Signoretti ou Flávio Dutra de Resende, pelo telefone (17) 3341-1400 ou poloaltamogiana@aptaregional.sp.gov.br.

O VITELO

O VITELO

MINISTÉRIO DA AGRICULTURA BRASIL INSPECIONADO 222 S.I.F.

Vitelo Vitellone

Uma carne muito especial

A carne de vitelo de leite, tenra, magra e de alto valor protéic é apreciada na Europa como a primeira das carnes. Aparece nos mais antigos receituários da culinária francesa, italiana alemã.

Vitelo ou vitela é a dominação dada a bezerros criad basicamente a leite, abatidos entre 4 e 5 meses de vid quando atingem o peso aproximado de 170 kg. O vitelo de leit é basicamente um subproduto da pecuária leiteira, já qu corresponde aos bezerros machos, que são mantidos junto à vacas apenas nos primeiros meses, colaborando para incentiva a produção de leite. Em seguida são destinados ao corte.

No Brasil só alguns criadores como a Vitellone têm s empenhado em produzir vitelos de leite confinados até os 12 dias. A carne de vitelo legítimo produzida pela Vitellon caracteriza-se por ser mais macia e mais clara, com men quantidade de gordura, seguindo os mais rígidos padrões d higiene e qualidade.

O consumidor brasileiro, além de exigente, está cada vez mai preocupado com sua saúde e, portanto com os alimentos qu consome. Visando uma melhor qualidade de vida d consumidores, a Vitellone oferece o vitelo, mais saboros muito mais saudável.

O consumo de vitelo teve início na Europa e agora est conquistando o paladar brasileiro. Tudo isso porque os bezerr são submetidos a uma dieta balanceada, a base de leite.
O resultado disso é um produto rico em proteínas e vitamina de coloração rosada e com apenas uma finíssima camada d gordura, recomendada a pessoas de todas as idades p auxiliar na formação e renovação dos tecidos e por conte baixo teor de colesterol.